



RESEARCH PAPER

No 6

Learning outcomes approaches in VET curricula

A comparative analysis
of nine European countries



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Foreword

This comparative study addresses the relationship between learning outcomes and curriculum policies and developments in vocational education and training (VET) in nine European countries: Germany, Ireland, Spain, France, the Netherlands, Poland, Romania, Slovenia, and the UK-Scotland.

The concept of ‘outcomes’ is not new to education and training; what is now evident is its greatly increased prominence over the past few years in national and European VET policies and in any discussion about curriculum reform. Undoubtedly, developments linked to the European framework on key competences for lifelong learning (2006) and the implementation of the European qualifications framework (2008) had a decisive influence on this curriculum development discourse.

Curriculum is increasingly seen by stakeholders as a dynamic framework guiding teaching and learning processes and as a steering mechanism for quality. It features in key European policy documents as a new consensus for contributing to Europe 2020, the European strategy for smart, sustainable and inclusive growth. Findings of empirical research widely recognise that curriculum relevance is a condition sine qua non, not only for improving the human capital potential of education and training graduates but also for retaining learners in education and training systems. The endemic irrelevance of curriculum may be one of the greatest obstacles to matching education and training provision successfully to learner and labour market needs.

Adopting a learning outcomes approach when developing curricula, valuing what a learner knows, understands and is able to do on completion of a learning process – irrespective of how, when and where this learning takes place – is seen by many European countries as an effective way to avoid such potential mismatches and promote active learning and inclusive teaching.

For VET providers and employers, outcome-oriented curricula can offer a valuable platform for bridging the worlds of education, training and work, providing a common language between competences acquired in learning and the needs of occupations and the labour market.

For teachers, a curriculum built on knowledge, skills and competences that learners can acquire through an interdisciplinary approach, is more challenging than traditional approaches but also more flexible in designing learning programmes tailored to the needs of learners and applying innovative pedagogies and assessment procedures.

For learners, an outcome-based curriculum is potentially user-friendly, allowing them to clarify the purpose of learning and giving them more opportunities for active learning, progression in education and training or integration in the labour market.

However, curricula based on learning outcomes are not automatically learner-centred, nor guaranteed to benefit learners. As this study shows, the relationship between outcome-based curricula and learner-centeredness depends on many factors, including how curricula are being delivered in learning environments.

The study, drawing from examples on curricula of the logistics sector, illustrates how outcomes of learning, increasingly featuring in many official curricula and other documents, have important conceptual differences and no clearly marked delimitation. Often names such as 'outputs', 'attainments', 'products' 'aims', 'objectives', 'capacities', 'assessment standards' or '(key) competences' are embedded in different theoretical methods of curriculum development and fulfil different roles and functions within the overall education and training system.

The study is undertaken within the overall work of Cedefop to support Member States and the European Commission on the implementation of the European qualifications framework at national and sectoral levels. It is part of an extensive comparative research work exploring the role of learning outcomes approaches in vocational education and training to design and describe qualifications, to set standards, and to influence quality assurance and certification approaches.

Aviana Bulgarelli
Director

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Executive summary

This study explores how the shift to a learning outcomes based approach affects curricula and learning programmes in vocational education and training in nine European countries (Germany, Ireland, Spain, France, the Netherlands, Poland, Romania, Slovenia and the UK- Scotland).

Learning outcomes – defined as ‘statements of what a learner knows, understands and is able to do on completion of a learning process’ – is a key concept in the design of European instruments fostering transparency, comparability, transferability and recognition of qualifications between different countries and at different levels. If qualifications are to be awarded on the basis of learning outcomes, underpinned by developments on national qualifications frameworks in the context of the European qualifications framework and the European credit system for VET, this must affect the various sectors of education and training by ‘backwash’. How do curricula frame the learning process to lead learners to the required outcomes? What are the consequences of these developments on defining, designing, organising, planning and implementing learning activities? How do European instruments and policies meet with other rationales for introducing learning outcomes in curricula? To what extent have countries adopted outcome-based approaches in VET curricula and learning programmes, and what are the consequences for curriculum development, stakeholder involvement, and teaching and learning practices? Do learning outcomes, as defined in curricula, contribute to making systems more learner-centred?

To provide some answers, research has been carried out using document analysis and expert interviews. Country studies were complemented by literature reviews and case studies on IVET curricula in logistics. In addition, two study visits were made to vocational schools in Germany and the Netherlands, where logistics teachers and students were interviewed.

Conceptual framework: defining curriculum and learning outcomes

The notion of curriculum is hardly new, but the way it is understood and theorised has altered over years and there remains considerable dispute over its meaning.

Curricula became broader, increasingly changing from a static document indicating the subject knowledge to be acquired at the completion of an academic year, towards a dynamic comprehensive framework embracing occupational standards and defining learning outcomes, assessment procedures and teaching and training methods. This evolution explains why today there is little agreement on where curriculum matters end and education, learning and training begin (Psifidou, 2009a).

In absence of a generally accepted definition of the terms curriculum and learning programme, the following working definitions were developed for the purposes of this research: *A curriculum is a normative document (or a collection of documents) setting the framework for planning learning experiences. Depending on the country, the type of education and training, and the institution, curricula may define, among other learning outcomes, objectives, contents, place and duration of learning, teaching and assessment methods to a greater or to a lesser extent. The learning programme is a written document planning learning experiences in a specific learning setting. It is developed on the basis of the curriculum and takes into account the learners' needs.*

The definition of curriculum used in this study must be distinguished from use in certain countries in the title of some documents; an example is 'a curriculum for excellence' in the UK-Scotland . Normative documents providing information for planning learning experiences may also include national qualification frameworks, laws on education and training, qualification standards and award specifications, so-called curriculum guidelines, and recommendations from the Ministry of Education.

The diversity of use and understandings of the term 'learning outcomes' across Europe, attested for instance by Winterton (in Cedefop; Winterton et al., 2006) and Cedefop (2009a), made it necessary to use the EQF definition as a starting point to compare the specific features of national learning outcomes in the framework of the country studies. In the EQF, learning outcomes are defined as 'statements of what a learner knows, understands and is able to do on completion of a learning process'. Being purely descriptive and neutral, this definition is useful in a comparative perspective as it allows consideration of national characteristics. In particular, it leaves open the questions of the theoretical foundation, the function and the operation of learning outcomes in curricula, important issues addressed by this study. Different terms used in the languages of the countries examined in the study, such as 'competence', 'aims', and 'learning objectives', were also considered to match the working definition of 'intended' learning outcomes.

Rationale for using learning outcomes in VET curricula and learning programmes

Close examination of the curriculum policies of the last 20 to 30 years in the nine countries examined in this study reveals that there are several backgrounds and rationales to the shift to learning outcomes. In some countries these relate to the rise of competence-based approaches in education. European developments linked to the European qualifications framework play an important role in transforming qualifications and shaping curricula around learning outcomes in some countries, especially in the newer Member States. But new approaches to learning and research findings on how the brain works, the need to establish a closer link between VET provision and the labour market, as well as new modes of governance, also have a decisive influence on the introduction of outcome-oriented curricula in VET.

One of the major reasons for using learning outcomes in curricula is the expectation that this will strengthen the link between VET and the labour market. This motivation has been a key to curriculum reforms as early as in the 1980s in some countries and it has led to the development of genuine national approaches to competence-based education in Germany, France, the Netherlands and the UK. The focus has been both on new methods of curriculum development (new methods of work analysis, involvement of social partners) and competence-based approaches on teaching practices and learning environments (work-based learning, action-oriented learning, combination of theoretical knowledge and professional skills).

Further arguments for developing curricula using learning outcomes and competences come from new theoretical insights into the factors influencing learning processes. Behaviourist, cognitivist and constructivist learning theories all acknowledge the benefits of linking learning processes to typical daily and work situations. Curricula based on learning outcomes focus on the results of learning processes. A difference must be made, however, between objectivist approaches, which lead to the definition of detailed outcomes for assessment purposes, and the subjectivist (constructivist) approach, in which learning is an open-ended process through which outcomes are constructed in the learner's mind according to his/her individuality. The latter approach calls especially for active learning methods and a learner-centred approach to teaching based on formulating broad outcomes to guide the learning process. The use of learning outcomes in curricula can, therefore, have different theoretical backgrounds and does not automatically lead to learner-centred systems, which are associated with constructivist approaches.

The use of learning outcomes in curricula can also be related to new steering and quality management concepts. The formulation of outcome-based standards is a way of ensuring quality in VET provision while granting more autonomy to training providers in defining learning programmes meeting the needs of their students.

Finally, European developments play an important role in the shift to learning outcomes in curricula. First, European instruments encourage transparency and recognition of qualifications (European qualifications framework and European credit system for VET) requiring the use of learning outcomes to define qualifications and inducing a shift from input-based to outcome-based qualification standards. Second, EU funds granted to innovative programmes (for instance ESF funding for the development of the Leaving certificate applied in Ireland) and European level discussion on how to meet the challenges of a knowledge-based society (e.g. through peer learning and study visits) can also be expected to encourage the shift to competence-based approaches in curricula.

The role of learning outcomes in national VET curricula and learning programmes

All nine countries examined in this study are, or have recently been, engaged in curriculum reforms including learning outcomes and a competence-based approach in VET curricula. The scope and the timing of these reforms varies depending on the country, with some countries having started already in the 1980s to introduce learning outcomes and competences in their curricula: examples are Germany (in the work-based part of the dual system), France and the UK. Others have just started in the wake of European developments and in relation with the development of national qualification frameworks, credit systems and the validation of informal and non-formal learning (e.g. Poland, Romania).

Although it is possible to identify a general shift to learning outcomes approaches, the differences in the understanding, function and operation of the concept of learning outcomes is striking. Defined either as overarching goals of VET or as the intended outcomes of a study programme or teaching units, learning outcomes carry different names (competence, objectives, capacities) and fulfil different functions. A didactic function and a regulative function can especially be identified, whereby curricula may contain more than one kind of learning outcomes, fulfilling different purposes.

The use of learning outcomes in curricula accompanies two trends in curriculum reforms across Europe (Braslavsky, 2001). The first is 'enrichment' of

curricula, meaning that the number of parameters addressed by curricula is increasing. Whereas curricula traditionally tended to be similar to syllabuses, reflecting in an objective way the body of knowledge to be transmitted, they are now increasingly perceived as policy instruments setting the framework for education and training stakeholders, including not only teachers and learners, but society as a whole. This implies that more stakeholders are involved in national curriculum development as well as in defining local learning programmes or school curricula. To assist achievement of learning outcomes determined in a participatory process, guiding principles on teaching and assessment, and concrete examples or 'best practices', are provided in the curricula and accompanying materials. The second trend is enhanced flexibility, which is intended to open up more individualised learning paths, contributing to a more learner-centred system. Learning outcomes increase flexibility through modularisation of curricula and the autonomy granted to teachers to develop and implement learning programmes. In this context, curricula focused on outcomes represent a new approach to public management, contrasting with the former regulation of learning processes via inputs (such as content, duration and methods of teaching) and a stronger focus on outcome-based quality assurance.

These two trends can be observed to different degrees in all nine countries under scrutiny. Different approaches can also be traced back to the particular aims of curriculum reforms and the specific structure, aims, values and traditions of national VET systems.

The contribution of outcome-based curricula to learner-centred VET systems

The present research reveals a trend to more demand-driven VET systems, in which modularisation is a key element in increasing the learner opportunity to select learning pathways and programmes according to their preferences and needs. Besides this institutional dimension of a learner-centred system, changes in teaching and learning methods also reveal a tendency to put the learner at the centre of the learning process. Active learning methods are increasingly promoted through written curricula analysed in the case studies. This shift from teaching to learning is supported through the prescription of compulsory learning arrangements (e.g. interdisciplinary projects, work-based learning periods, etc.); through regulations concerning assessment methods; and through guidance and support materials for teachers and trainers. However, practices are changing only gradually: teacher-centred instruction still plays an important role as revealed

from the study visits and surveys with teachers and students in Germany and the Netherlands. Often, learner-centred teaching methods are not perceived by teachers as being either feasible or effective. Among the various factors determining successful implementation of an outcome-oriented curriculum reform is the empowerment of teachers and trainers and the support they receive. But even if adequate teacher training is provided, other institutional and organisational constraints, especially the number of students per classes which is often too high, are mentioned in interviews as barriers to putting the learner at the centre of the learning process.

In terms of concrete implications for curriculum policies, the results of this study mainly point to the need to pay closer attention to the success factors of outcome-oriented curriculum reforms:

- (a) the need to find a balance between holistic understanding of competence, matching the pedagogical goals underpinning the curriculum, along with detailed statements of learning outcomes providing a clear basis for the curriculum delivery and quality assurance;
- (b) empowerment, as a key-word to describe the support which must be granted to teachers and training providers for them to cope with their new responsibilities in developing learner-centred programmes and learning activities;
- (c) quality assurance and accountability systems, which act as a counterbalance to the increased autonomy of training providers and teachers.

The present study facilitates better understanding of theoretical and conceptual issues behind outcome-oriented policies and practices in the nine examined countries. It highlights the key role played by learning outcomes in curriculum reforms and brings evidence of important changes in national curricula. The study, however, is limited in scope to analysing the written curricula and the two study visits carried out in VET institutions – being far from representative – provide only hints about the implications of outcome-oriented curricula on learning processes. To analyse the extent to which learning-outcome approaches may contribute to more learner-centred VET systems in Europe, it is necessary to analyse the present findings on curricula against similar institutional developments in other parts of the system (qualification frameworks, funding schemes, guidance provision, etc.). Further, it would be interesting to adopt the learner's perspective and analyse at micro-level how outcome-oriented curricula may influence teaching and learning practices, learner achievement and the progression of learners within the education and training system.

Introduction

The potential benefits of an approach to vocational education and training (VET) based on learning outcomes have been widely acknowledged by all European countries (Cedefop, 2009b). The common European tools developed in the framework of the Copenhagen process, including the European qualifications framework (EQF) and the European credit system for VET (ECVET), use learning outcomes as a key mechanism to reach the objective of 'transparency, comparability, transferability and recognition of competences and/or qualifications, between different countries and at different levels' (Copenhagen declaration, 29-30 November 2002). These tools require a similar shift to learning outcomes in national VET systems: there is some evidence that learning outcomes are increasingly used to design qualifications, standards and to orient quality assurance and certification approaches across Europe (Cedefop, 2009b; Cedefop, 2009c).

If qualifications are to be awarded based on achieved learning outcomes, this raises the question of how curricula and learning programmes must be designed to lead learners to the intended learning outcomes. In the Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training (Education and training 2020), the need for approaches based on learning outcomes in curricula is highlighted, especially in relation to the strategic objective of making lifelong learning and mobility a reality. The fact that the curriculum is also mentioned as one of the major levers for change with other strategic objectives of the framework might be interpreted as a new European consensus on the relevance of curriculum reforms to the Lisbon goals. To promote creativity and innovation in European societies, the Council recommends using curricula as an instrument to foster more learner-centred approaches in education and training (Council of the European Union, 2008).

In spite of this increasing awareness of curricular issues, there is a lack of a European comparative perspective on current curriculum changes. What does an 'outcome approach' in curricula entail in terms of teaching and learning? What are the implications of the use of learning outcomes for curricula and learning programmes? To what extent are learning outcomes already being used in defining curricula and learning programmes? How has the introduction of learning outcomes affected the definition, design, organisation, planning and implementation of learning activities? This study was designed to explore how the shift to learning outcomes, induced by European developments, met with

other reform drivers, such as concerns with the quality, and the relevance and access to national education and training, to shape curriculum reforms in nine European countries. Taking into account the curriculum reforms launched nationally in the context of competence-based approaches as early as in the 1980s, the study is conducted around the core question whether the use of learning outcomes in curricula may be one of the factors contributing to making VET systems more learner-centred.

By comparing current national curriculum reforms and debates and analysing curricula in the occupational field of logistics, the study sheds some light on the relationship between learning outcomes and the development of curricula and learning programmes in Germany, Ireland, Spain, France, the Netherlands, Poland, Romania, Slovenia and the UK-Scotland.

The first chapter presents the conceptual framework of the study, defining the key terms used, and the research design and tools. The second chapter addresses the theoretical backgrounds to the use of learning outcomes to define curricula, mainly based on findings of extensive literature research. The third chapter analyses the different roles of learning outcomes in curriculum reforms in the nine countries under consideration, presenting the findings of desk-based research and empirical studies. It examines in detail how learning outcomes in national curricula are being perceived and operate; the curriculum development methods and processes used; the implications that outcome-oriented curricula may have on teaching and assessment methods, as well as on learning materials. The main differences and similarities between curricula in vocational, general and higher education are also discussed. The last chapter summarises the main conclusions drawn, addressing specifically the core question of this study – the contribution to learner-centeredness of VET systems – and concludes with evidence-based considerations for policy-makers, practitioners and researchers.

1. The explorer's toolkit: definitions and methods

1.1. Main concepts and working definitions

1.1.1. Curricula and learning programmes

1.1.1.1. *Different views on the curriculum*

In their book *Curriculum for a new millennium*, Longstreet and Shane view curriculum as a 'historical accident', meaning that [...] *it has not been developed to accomplish a clear set of purposes. Rather, it has evolved as a response to the increasing complexity of educational decision making* (Longstreet and Shane, 1993, p. 7). With this statement, the authors identify the challenge in a comparative analysis of the curriculum, which is an object deeply rooted in its national context. As a consequence, there is a wide variety of definitions of the term 'curriculum' in the academic literature (Marsh, 2004).

Isenegger (1975) classifies the curriculum concept into two understandings. First, curriculum is a document, a codified form of educational intentions. This understanding is widely used in German-speaking areas. Second, curriculum is the totality of (planned) activities influencing the teaching and training process. This understanding is more common in English-speaking areas (Isenegger and Santini, 1975). As the concept of curriculum is related to the learner, it is sometimes also used in a third meaning, as an equivalent of the school career of a pupil or the apprenticeship of a trainee. In this sense, the concept describes an individual course of study in its totality as one unit (Deutscher Bildungsrat, 1971).

Braslavsky (2001) takes up the notion of curriculum as a document, when she outlines that this had been the original understanding of the term. Here, curriculum as a document means, [...] *a document prepared by experts, depending on the state of the art of disciplinary and pedagogical knowledge* – it is a product of a technical process. The author notes, however, that the understanding of the concept is changing towards the curriculum as a contract between society, the State, and educational professionals. It has thus a political and a technical/professional dimension and, in this respect relates to the link between educational goals and everyday life in learning institutions (Braslavsky, 2003).

Looking at the different understandings of curriculum over time in the US, for instance, a clear link appears between definition and the changing approaches to pedagogy. Up to the First World War, or until Dewey's progressive pedagogy entered American schools, curriculum was defined as [...] *subject matter presented for study, or as the content of instruction [...]* (Sowards et al., 1961, p. 358; Huhse, 1968, p. 12). Dewey then shifted the focus from content to learner. This also meant that the concept of school was broadened – for Dewey – to include school means to educate oneself beyond the frame of formal lessons, to practice social behaviour and to collect many and diverse experiences. Thus, curriculum is defined as *the totality of experiences that are sponsored by the school* (Tanner, 1965, p. 214; Huhse, 1968, p. 13).

The term experience, which is part of this curriculum definition, is understood as *all the experiences that a learner has under the guidance of the school* (Harris, 1960, p. 358; Huhse, 1968, p. 13). But this leads to a curriculum concept which is endless, as the concept is seen so broadly that it becomes synonymous with life and education itself. Bloom specifies the term experience when he states, *Educational experiences have a special character in that they are selected and planned by one person with a view to their impact upon the learning of another. Educational experiences, as planned in schools, are intended to have a more intense effect than ordinary life experiences. These educational experiences are also planned to alter the student in a given direction* (Bloom, 1958, p. 88; Huhse, 1968, p. 13-14). Mackenzie proposes dropping the term experience and substituting it with the term engagement. He perceives curriculum as [...] *the learner's engagement with various aspects of the environment which has been planned under the direction of the school. The assumption here is that engagements can be observed and to some extent controlled* (Mackenzie, 1964, p. 402). In the same year, Goodlad's report about curriculum reform in the US has the following definition: *A curriculum consists of the lessons and tasks learned and performed by the students* (1964, p. 53). What is common to all these definitions of curriculum is the focus on the learner, in contrast to the focus on contents, which characterised former definitions.

In England, different historical processes are linked with the curriculum concept. In the 1570s, curriculum meant the pathway(s) [...] *students were expected to follow across a socially approved map knowledge* (Hamilton and Weiner, 2003, p. 624). In turn, these pathways were produced in the educational institutions that emerged in the Renaissance and Reformation; curriculum was an expression of social order. But it was also sequenced into a chronological order. Hence, the concept 'curriculum' was understood as [...] *an instrument that not only supported ordered instruction delivered by teachers and followed by*

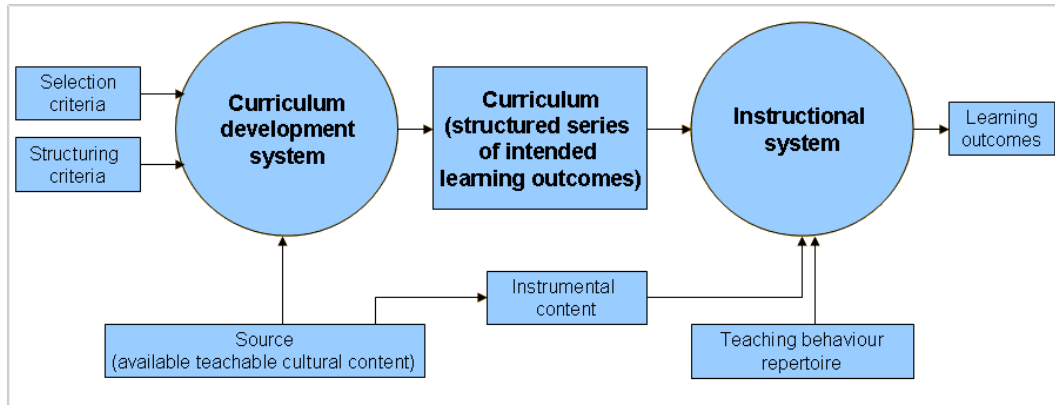
learners, but also promoted different conceptions of social order (Hamilton and Weiner, 2003, p. 624).

The Oxford English Dictionary – an institution in itself in Great Britain – locates the earliest source of curriculum as 1663 in Glasgow (Goodson, 1997). Hamilton believes that the sense of structural order in curriculum came from the ideas of Calvin. As Calvinists gained in power and position – in the Netherlands, Switzerland and the UK-Scotland – the idea of discipline, which constitutes the core of Calvinism, was applied to the internal principles and external machinery of civil government. *This works on two levels with regard to curriculum definition. First there is the social context in which knowledge is conceived and produced. Second there is the manner that such knowledge is 'translated' for use in a particular educational milieu* (Goodson, 1997, p. 24). Hence, the curriculum is the expression of the relationship between knowledge and social/political control.

Frey differentiates the definition of the curriculum concept in three fields of application. First, in the colloquial language, where curriculum is understood as a programme, which has to be implemented or is already being implemented. Second, in the applied sciences, where curriculum is perceived as a planning object. It is a syllabus of instruction, which has to be developed, codified and prepared for implementation, and implemented. Third, in theory-oriented sciences curriculum is seen as intended learning outcomes, the outcomes being structured. The educational intention is common to all three fields of application of the concept (Frey, 1971), carrying the idea of planning.

There are also theorists, such as Macdonald, who view curriculum as a system or process model, in which the elements are inputs, outputs, processes and feedbacks. Johnson argues that those theorists confuse the curriculum with the curriculum development process (Johnson, 1967). Johnson himself defines curriculum as [...] *a structured series of intended learning outcomes* (Johnson, 1967, p. 130). It is not the means that are prescribed, but the results of instruction. Johnson's ultimate understanding of curriculum concept is described in the following citation: *Although curriculum is not a system, it may be viewed as the output of a 'curriculum-development system' and as an input into an 'instructional system'* (Johnson, 1967, p. 133). So, Johnson views curriculum as a facilitator between two systems (see Figure 1):

Figure 1. **Curriculum as an output of one system and an input of another**



Source: Johnson, 1967, p. 133.

1.1.1.2. *The definition of curriculum and learning programme in this study*

A review of the literature on curriculum theory does not provide a commonly agreed definition of curriculum. As noticed by several writers, the term 'curriculum' is elusive and epistemologically ill-defined (Lewy, 1991, p. 26-28; Psifidou, 2007 p. 17). Not surprisingly, there are many definitions of curriculum highly dependent on historical circumstances, pedagogical approaches and national contexts. Rule (1973) identified 119 definitions of the term and there have been several additions to this list since then.

For the sake of this comparative research, it is necessary to agree on a working definition broad enough to account for the differences encountered in the nine country studies, but precise enough to define the scope of the study.

The definition of curriculum proposed by Cedefop is *the inventory of activities implemented to design, organise and plan an education or training action, including the definition of learning objectives, content, methods (including assessment) and material, as well as arrangements for training teachers and trainers* (Cedefop, 2008b). Learning programmes, by contrast, are *an inventory of activities, content and/or methods implemented to achieve education or training objectives (acquiring knowledge, skills and/or competences), organised in a logical sequence over a specified period of time.*

We can then assume that the term curriculum refers to the design, organisation and planning of learning activities, whereas the term programme refers to the implementation of these activities.

These definitions provide a range of useful elements to characterise curricula:

- a list of possible items included in a curriculum (learning objectives, contents, teaching and assessment methods, materials and arrangements for training teachers and trainers);
- differentiation between the general level, at which curricula address all training and teaching processes, and the specific level at which curricula are 'broken down' to define learning programmes addressing the needs of a definite group of learners at a pre-determined place in a given period of time.

Based on the literature review, this study suggests further refining the definition by including the following dimensions:

- (a) planning: the idea of educational intention and its correlate of planning are central to most definitions of curriculum. This idea is useful to narrow down the definition, to avoid the risk of equating the terms curriculum and education. As a consequence, curriculum is understood as a planning instrument.
- (b) a contract between different training and education stakeholders: this means that the curriculum has a normative character (i.e. it may take the form of a law, a decree, official guidelines, etc.).
- (c) curriculum as a document (or a collection of documents): for practical reasons, the comparative analysis of curricula in nine countries has to focus primarily on the written curriculum, as opposed to the taught curriculum.
- (d) distinction between curriculum development, the curriculum and curriculum implementation: Curriculum is understood as the result of curriculum development (Johnson, 1967). The implementation of curricula, including especially teaching and learning practice, is considered to be influenced to a great extent, but not exclusively, by the written curriculum (the role of values and beliefs, organisational context, etc.).

Based on these elements, the working definition of curriculum used in this project is the following:

A curriculum is a normative document (or a collection of documents) setting the framework for planning learning experiences. Depending on the country, the type of education and training, and the institution, curricula may define, among other, learning outcomes, objectives, contents, place and duration of learning, teaching and assessment methods to a greater or to a lesser extent.

The definition of learning programmes provided by Cedefop includes the idea of implementation. While implementation refers to interaction between teachers and learners in the learning situation, the word programme belongs to planning. In this respect the learning programme makes the curriculum more concrete and adapts it to a specific learning setting; however, it is still a written

document which has to be delivered in a specific learning environment. Hence, both curriculum and learning programme belong to the written curriculum, referring to a planning instrument. In contrast, implementation refers to the taught curriculum.

So, in the working definition of this study, the main difference between a curriculum and the learning programme lies in the general versus specific character. A curriculum is binding (i.e. its normative character) for all training providers who want to use it, therefore it must be 'general' in the sense that it is applicable to a variety of places and learners. A learning programme is developed according to the curriculum for a definite group of learners in a given learning setting, ideally taking into account the particular needs of the learners.

From this explanation, the working definition of learning programme used in this study is:

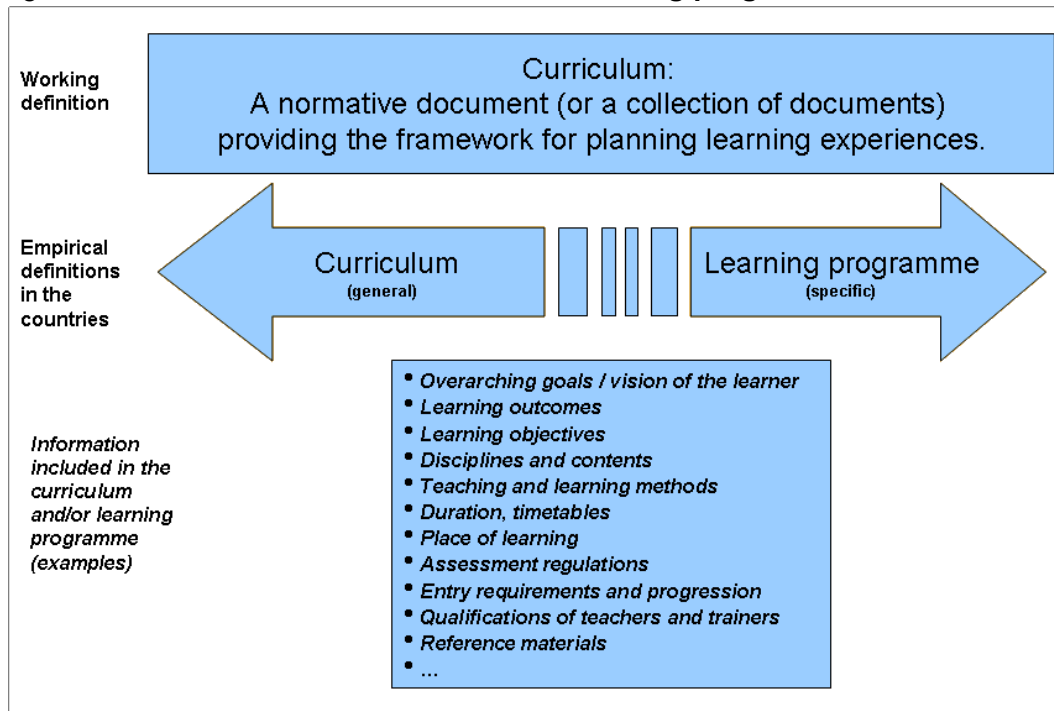
'The learning programme is a written document planning learning experiences in a specific learning setting. It is developed on the basis of the curriculum and takes into account the learners' needs.'

Because of its comparative dimension, the working definitions used in this study cannot provide a comprehensive description of the information provided by a curriculum. As changes are taking place at different paces depending on the countries and the segments of the education system, this means that the shape and content of curricula vary from country to country. The shape and content of learning programmes, which are often, but not exclusively, dependent on the shape and content of curricula, vary accordingly; usually the more general and flexible the curriculum is, the more comprehensive and detailed learning programmes must be to translate curriculum specifications into a specific setting. The relationship between this broad working definition of curriculum and the definition of curriculum and learning programmes used in the country studies is illustrated below (Figure 2). The arrows symbolise the fact that, depending on the country or the education sector, the scope of the curriculum is broad or narrow. It addresses all or only some of the different elements which, according to this working definition, could be included in a curriculum, such as learning objectives, contents and duration.

The definition of curriculum used in this research must be distinguished from use in certain countries, where 'curriculum' may be used in the title of some documents (for instance 'a curriculum for excellence' in the UK-Scotland). Normative documents providing information for planning learning experiences may also include national qualification frameworks, laws on the education and training system, qualification standards and award specifications, so-called

curriculum guidelines, recommendations from the Ministry of Education, and others.

Figure 2. **Definition of curriculum and learning programme**



Source: Cedefop.

1.1.2. Learning outcomes

In contrast to the term curriculum, the concept of learning outcome has been the object of discussions which led to an agreed definition in EU policy documents and also serves as a reference in many countries. In the European qualifications framework (EQF), learning outcomes are defined as *statements of what a learner knows, understands and is able to do on completion of a learning process, which are defined as knowledge, skills and competences*. (European Parliament and Council of the EU, 2008, Annex I). In this definition, the form of learning is not specified: it can take place either in formal or non-formal education arrangements, or informally through experience gained in the community or at the work place.

In spite of the apparent simplicity of this definition, previous research unravelled a significant diversity of possible use and understanding of learning outcomes. Adam (2004, p. 4-5) collected different definitions.

- A statement of what a learner is expected to know, understand and/or be able to demonstrate at the end of a period of learning.
- Learning outcomes are statements that specify what a learner will know or be able to do as a result of a learning activity. Outcomes are usually expressed as knowledge, skills, or attitudes.
- Learning outcomes (are) specific measurable achievements.
- A learning outcome is a statement of what competences a student is expected to possess as a result of the learning process.
- Learning outcome statements are content standards for the provincial education system.
- Learning outcomes are statements of what students are expected to know and to do at an indicated grade, they comprise the prescribed curriculum.

At first sight, these definitions of learning outcomes do not seem to differ significantly from each other or from the definition in the European qualifications framework, but the first distinction is that learning outcomes can be defined at different levels (Cedefop, 2009b):

- (a) systemic, as in qualification frameworks or as overarching goals of VET;
- (b) qualifications, as in qualification standards;
- (c) curricula and learning programmes.

Further, according to the level on which they are defined, they may fulfil different functions: *recognition of prior learning, award of credit, quality, learning plans, key competences for life, credibility for employers as well as modernising the governance of education and training as systems are reformed to encompass lifelong learning* (Cedefop, 2009b, p. 10). Finally, learning outcomes are formulated on different concepts of competence. These concepts influence the form of learning outcome specifications (Cedefop, 2009c) and can be expected also to have an impact on the relationship between learning outcomes and curricula and learning programmes.

These definitions of learning outcomes put the term close to other concepts, with which it may even overlap, such as competence, learning objectives or aims and learning output. One simple but significant difference between learning outcomes and competence can be found in the understanding of the EQF. According to Markowitsch and Luomi-Messerer (2008, p. 41) *learning outcomes are more comprehensive than competences, and hence the term 'learning outcome' can be used as an umbrella term for competence(s), while the reverse is not the case*. Competence, in this context, refers to performance in a given situation, i.e. to the ability to use knowledge and skills in an appropriate way. According to that understanding, competence can be defined as *contextualised learning outcomes* (Cedefop, 2009e, p. 6). However, various connotations and different concepts of competence in each country make a clear differentiation more problematic. As the study conducted by Winterton et al. shows (Cedefop;

Winterton et al., 2006), a closer look at national understandings of these two terms and their relationship is necessary (see Section 3.1).

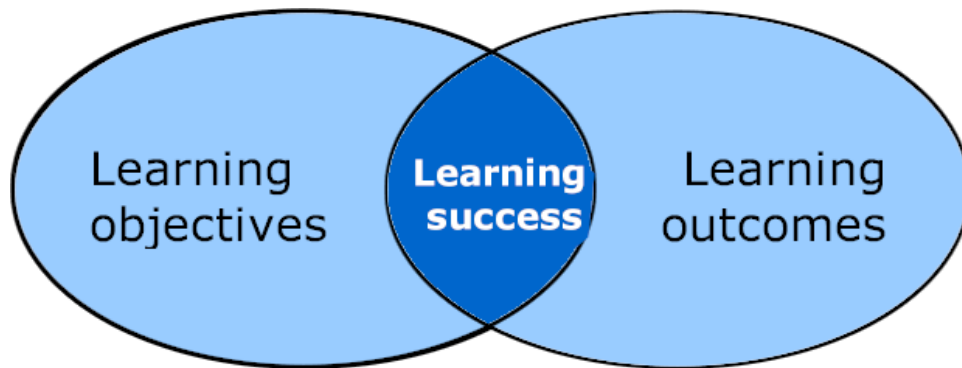
On the relationship with learning objectives, Adam (2004, p. 5) explains that *learning outcomes are concerned with the achievements of the learner rather than the intentions of the teacher (expressed in the aims of a module or course). They can take many forms and can be broad or narrow in nature. There is often some confusion between learning outcomes and aims and objectives and certainly many regard learning outcomes and objectives as the same thing and use the terms synonymously. Aims are concerned with teaching and the teachers intentions whilst learning outcomes are concerned with learning.*

Coles (2006) further develops this idea by pointing to the role of assessment in understanding the difference between both terms: *The main distinction between learning objectives and learning outcomes arises through assessment of achievement. Assessment of achievement of learning objectives can take many forms and can include assessment of achievement across the content of a programme of learning which might include assessment of all objectives or could include assessment of some or most of them depending on the tool of assessment. On the other hand the assessment of learning outcomes will be inclusive of all outcomes and will be based on assessment criteria relating to each learning outcome* (Coles, 2006, p. 14).

However, the problem remains that both distinctions cannot easily be operationalised at curriculum level. If learning outcomes are elements of a curriculum or standard, they are prescribed a priori, before the beginning of the learning process. Therefore they are *learning outcomes to be achieved by the learner* (intended learning outcomes) and might differ from the actually achieved learning outcomes, which might encompass unintended learning outcomes as well.

Euler and Hahn (2004) also point to the risk of confusion when no difference is made between intended and achieved learning outcomes. The authors differentiate between learning objectives, learning outcomes and learning success. Learning objectives are the knowledge, skills and competences intended by the teacher, which the student should achieve through the learning process. Learning outcomes are all competences, knowledge and skills achieved by the learner through the learning process. Learning success is the assessed overlap between these two elements, i.e. the totality of knowledge, skills and competence which was intended and achieved, excluding non-intended or non-achieved learning outcomes. The figure below shows this overlap.

Figure 3. **Difference between learning objectives, learning outcomes and learning success**



Source: Euler and Hahn, 2004, p. 121.

The last term to be demarked from learning outcome is learning output. In a Cedefop study (2008c), the difficulty to distinguish between the two terms (...) *is generally acknowledged [...]. The terms 'outputs' and 'outcomes' are used interchangeably* (Cedefop, 2008a, p. 1). One approach to distinguishing between input, process, output and outcome is made by Sloane and Dilger (2005). Following the line of the learning process, Sloane links the input, process, output and outcome to the different elements specified in a curriculum. In his view, learning outcomes refer to the transfer of learning outputs in the occupational context. The distinctive feature of outcome-oriented curricula would therefore be their orientation towards the labour market and employment requirements, whereas traditional curricula would stick to the educational context and a body of knowledge to be transmitted:

Table 1. **Classification of steering tools for instruction**

Phases of education and training	Input: framework conditions and resources	Process: teaching and training	Output: results of learning	Outcome: application of learning to professional situations
Curriculum specifications	subject oriented syllabuses	regulations on teaching methods	syllabuses oriented on learning aims	qualification standards based on learning outcomes

Source: Sloane and Dilger, 2005.

This table illustrates the link which can be established between expected learning outcomes (as defined from labour market and employment requirements), and the input, process and output variables which should ultimately lead to achieved learning outcomes. Following this scheme, the distinctive feature of an outcome-oriented curriculum approach is the determining role played by the analysis of professional practice in curriculum development.

This approach to curriculum development is usually known as competence-based or outcome-based training in the Anglo-American context. It is focused on describing desired learning outcomes (skills or competences) determined by different methods of evaluation, which are to be assessed and certified. From a didactic perspective, these learning outcomes are intended learning results. The main characteristics of competence-based or outcome-based curricula are the following (Frommberger, 2004, p. 416-417):

- (a) formulation of specific curricular elements is done primarily in terms of expected individual properties, behaviour and dispositions;
- (b) by focusing on the desired learning outcomes, and mostly lacking regulations regarding the usual input elements (i.e. admission to the examination is largely independent of the type of learning, learning time or learning sites), informally acquired skills can also be assessed and certified;
- (c) the non-standardisation of learning also implies that learners take their own responsibility for it. This allows for individualised learning paths, but also impacts on the role of the teacher in formal learning contexts.

This overview shows that in existing literature on learning outcomes, the delimitation between learning outcomes and terms like competence, learning objectives or aims and learning output is not clearly marked. The different definitions and categorisations of learning outcomes seem to be not consistent enough to dispel the presented overlaps. Given the lack of a consensual and unified definition of learning outcomes across the countries (and within them), the quoted definition of the EQF was used as a working definition and as a starting point for the research. It should be noted, however, that this study allows careful examination of the intended learning outcomes as prescribed in official written documents, and under whatever terms are employed in the respective countries (objectives, competences, aims, etc.). Examining achieved learning outcomes would require a completely different methodological approach and research design, outside the scope of this study.

1.2. Research questions and study scope

1.2.1. Research questions

The main purpose of this study is to analyse how the shift to a learning outcomes-based approach affects curricula and learning programmes. The main assumption is that the increasing use of learning outcomes in curriculum policy may bring profound implications in defining, designing, organising, planning and implementing learning activities and for making systems more learner-centred. The use of learning outcomes makes systems more learner-centred, in that systems are more demand-driven and education and training practices focus less on teaching and more on learning. To explore this assumption, a research framework was designed for the description of the role of learning outcomes in VET curricula and learning programmes in the nine countries examined in the study. It focused on specific questions.

First is to what extent have learning outcomes approaches been developed or used to redefine curricula and learning programmes and what alternative methods of curriculum development have been used? The different motivations and perspectives for launching curriculum reforms in recent decades were examined, focusing particularly on the introduction and implications of learning outcomes in curricula at national level. These questions also raise the issue of the role of curricula as a policy instrument for steering VET systems, leading to the question whether the understanding of curricula (what should it contain, who should define it) has been changing in relation with the shift to learning outcomes.

Further questions included the implications of the learning outcomes approaches for curriculum design: what are the consequences for the definition of learning objectives, the content, the methods, the material used and the teachers and trainers arrangements?

These questions point to the consequences of using learning outcomes on the elements defined in the curriculum. What are the methods used for defining learning outcomes? What does an outcome-oriented approach of curriculum design imply for the definition of contents, the place and duration of learning, the teaching and learning methods, assessment methods, and the teaching materials.? How are teachers prepared to deliver the new curricula?

There are also the implications of the learning outcomes approaches for the learning programmes: what are the consequences for the achievement of the education and training objectives? Curricula need to be adapted to the particular needs of learners. This is the role of training providers and teachers and trainers.

How do they translate curricula into learning programmes? How are these delivered in the different learning settings?

Finally, using the information collected from responses to these questions, the study aims to identify to what extent the learning outcomes approaches in curriculum policy contribute to making systems more learner-centred.

One characteristic of the learning outcomes approach is the focus on the learner (Coles, 2006). The absence of a Europe-wide, transnational academic discourse on learner-centred approaches in VET makes it difficult to identify an agreed set of features distinguishing learner-centred systems. Accordingly, literature on the impact of learning outcome approaches on curriculum development and learning programmes in VET was found to be mainly rooted in national contexts. Conclusions from the literature review nevertheless allow distinction between institutional and pedagogical-didactical aspects of learner-centred approaches.

The institutional aspects of learner-centred approaches concern the demand-driven character of a system. The following elements characterising demand-driven VET-systems can be identified (Frommberger, 2005; Billet, 2000):

- (a) curricula are modularised, allowing learners to choose from a set of modules those best suited to their needs and preferences;
- (b) the workload can be adapted to learner needs (full-time and part-time training);
- (c) mobility between different training institutions and learning contexts (also international) is possible;
- (d) prior learning, be it formal, informal or non-formal, is recognised for the award of qualifications and in provisions concerning entry requirements for training programmes;
- (e) units are validated separately, when the learner has achieved the learning outcomes, rather than all at once to a predetermined date;
- (f) qualifications or partial qualifications are offered on different levels;
- (g) teachers and trainers (schools and companies) have a high degree of autonomy to plan learning activities and define learning arrangements according to the learners' needs.

Most pedagogical-didactical aspects of the learner-centred approaches are defined in contrast to 'teacher-centred' or 'traditional' approaches. Although the shift from teaching to learning is broadly acknowledged as an essential feature of learner-centred education and training, there is no agreement about the concrete implications for curricula and learning programmes. The main principle is that learner-centred education emphasises learning processes and the individual learner with his interests, capacities and needs (Henson, 2003). Consequently,

the role of teachers and trainers is questioned, becoming closer to guidance and coaching than to instruction: the teacher is supposed to moderate and organise the learning process rather than to transmit the knowledge (Backes-Haase, 2001). This implies the use of formative assessment and of teaching methods which are more interactive and enforce learner participation in teaching and learning processes.

Drawing on these features of a learner-centred system, this study primarily addresses those aspects immediately dependent on the curriculum: the flexibility and autonomy granted to teachers and learners to individualise and adapt the learning programme; and the teaching and assessment methods and materials used to deliver the curriculum.

1.2.2. Scope of the study

While the study focuses on vocational education and training, general and higher education were also taken into account to identify the specific challenges, similarities and differences between the subsystems of national education and training systems with regard to outcome-oriented curricula. To explore the initial hypothesis that the use of learning outcomes is making systems more learner-centred, the overall trends in curriculum design and implementation were analysed and compared in nine selected countries. The choice of countries was based on the following criteria:

- (a) geographical and geopolitical criteria: geographical spread, small/large countries, date of accession to EU membership;
- (b) educational systems: centralised/decentralised, school-based/workplace-based, with/without national qualification framework;
- (c) experience/tradition in using learning outcomes: countries with a long national tradition in outcome-based or competence-based education and training, and countries where the shift to learning outcome is a more recent development.

Nine countries were selected for in-depth study: Germany, Ireland, Spain, France, the Netherlands, Poland, Romania, Slovenia and the UK. The country reports focused on initial vocational education and training (IVET), especially on the training paths taken by most students. Continuing vocational education and training (CVET) is included where it is regulated by the State in a way that allows general remarks about the implementation of learning outcomes.

For deeper insights into the effects of learning outcomes on curriculum development and the implementation of learning programmes, one vocational programme was analysed in each country in the field of logistics. Logistics is a growing sector in Europe, with jobs (excluding transport and support)

representing approximately 2-2.5% of overall employment ⁽²⁾. The branch is subject to a high degree of international mobility and professional challenges due to changing technologies. As a consequence, curricula in logistics are often newly created or up-dated, offering a good example for analysing current reforms. In countries with a large number of specialised qualifications related to warehousing and transport, preference was given to a qualification including administrative aspects (for instance order processing clerk) over management, operative (for instance forklift driver, packer) and supporting factors. The curricula analysed in the case studies are associated with the following qualifications:

- (a) France: *baccalauréat professionnel logistique*;
- (b) Germany: *Fachkraft für Lagerlogistik*;
- (c) Ireland: warehouse skills (FETAC minor award);
- (d) UK-Scotland: Curriculum for excellence, national progression award (NPA) in supply chain operations at SCQF level 5, and SVQ logistics operations management level 3;
- (e) Poland: *technik logistyki*;
- (f) Spain: *organización del transporte y la distribución*;
- (g) Slovenia: *logistični tehnik*;
- (h) The Netherlands: *logistiek teamleider*.

Apart from Ireland and the UK-Scotland, where no difference is drawn between IVET and CVET, these qualifications represent the first degree in IVET (upper secondary/non tertiary VET) to enter the labour market in logistics. This choice takes into account the fact that higher level qualifications are usually more specialised, more diverse in their shape and delivery modes, and account for a smaller number of students. The priority given to IVET in the case studies reflects the fact that, in most countries, national curriculum policy is primarily focused on IVET, while CVET is subject to market regulations.

In the case of the UK-Scotland, the case study included 'a curriculum for excellence', in which learning programmes for the award of specific qualifications are embedded, as well as two very different examples of logistics qualification programmes accessible in IVET. In Ireland, there is no specialisation offered in transports and logistics which could be compared to those offered in the other countries in terms of level (i.e. first broad vocational programme opening the way to the labour market), and relative number of students. Broad logistics qualifications are found in higher education, where entry requirements, curriculum development rules and teaching and assessment practices differ from

⁽²⁾ Logistic training database: <http://www.novalog-project.org/english/database/> [cited 13.1.2009].

VET. For this reason, the case study included a specialised qualification in logistics (FETAC minor award), offered in the further education sector, which is open to young learners as well as to adult learners. To illustrate developments in IVET, a complementary analysis was carried out on the Leaving certificate applied in construction studies; the Leaving certificate applied is the first level qualification for entry to the labour market.

The German case study presents an example of the system of apprenticeship, which is the dominant pathway in VET. The programme leading to the qualification *Fachkraft für Lagerlogistik* was renewed in 2004. It belongs to the occupational field of business administration and it is one of two logistics qualifications at that level.

The Dutch case study is based on the curriculum for the qualification of *logistiek teamleider*, which can be obtained either through work-based or through school-based learning.

The Polish case study on logistics curricula examines the curriculum of the qualification *technik logistyk*, which was approved by the Ministry of Education in June 2005 and by the Ministry of Science and Higher Education in 2006. Educational programmes are offered in the four-year technical secondary school, which is the most important school type in IVET in student numbers, as well as in post-secondary schools.

The Spanish qualification leads to the level 3 (*técnico superior*) in the national qualification system. The programme is school-based and includes one module of workplace learning. It was developed in February 2008 and is registered in the national catalogue of vocational training.

The Slovenian vocational training programme *logistični tehnik* belongs to technical upper-secondary education. The coursework is organised within schools and lasts four years, including obligatory in-company training of 152 hours. The programme started for the first time in the school year 2008.

1.3. Methodology

Both primary (interviews and surveys) and secondary research (literature review) were carried out to provide empirical materials for a comparative analysis of curricula and learning programmes.

The following research tools were used in the research.

1.3.1. Desk research

The desk research provided information for the country studies and the case studies on logistics. It included analysis of following documents:

- (a) existing country reports, including Cedefop database on VET in Europe, Eurybase, the OECD, and Unesco;
- (b) statistical data on VET from national sources;
- (c) legislation and policy strategies on curriculum, assessment, textbooks, teacher training, etc.;
- (d) guidelines and support materials published by national curriculum authorities,
- (e) learning programmes and syllabuses in logistics;
- (f) working documents and minutes of curriculum development groups;
- (g) academic national and comparative literature.

1.3.2. Interviews

Written and oral semi-structured interviews (either face to face, by telephone, or by e-mail) were conducted. The main aim of these interviews was to obtain more detailed information on the use of learning outcomes in curricula and learning programmes, and their impact on teaching, learning and assessment, and on the provision of teacher training. The interviewees were representatives of ministries, state agencies and sectoral organisations, plus teachers, school leaders and researchers; they were selected for their involvement in curriculum design and implementation (see Annex 2).

The questionnaire addressed the following topics:

- (a) understanding of key concepts such as learning outcomes, competences and curriculum at national level;
- (b) the role of learning outcomes and competence-based approaches in curriculum reforms during recent decades;
- (c) legislation on curriculum development introducing learning outcome approaches;
- (d) actors involved in outcome-oriented curriculum development and if changes have occurred due to emphasis on outcomes;
- (e) learning arrangements in curricula and learning programmes, including place of learning;
- (f) teaching methods and practices and whether these have changed because of the learning outcomes approaches applied in VET curricula and learning programmes;

- (g) assessment methods used in VET (both IVET and CVET) to evaluate student achievement and whether these have changed towards measuring the learning outcomes;
- (h) teacher and trainer training provision and changes to support VET curriculum reforms towards learning outcomes approaches;
- (i) teaching materials and quality assurance mechanisms to check the conformity of textbooks to official regulations on curricula and learning programmes.

1.3.3. Research template for the case studies

The case studies used a template reflecting the main research questions of the study. Each item of the template was addressed through desk-based research and complemented by individual interviews with those involved in curriculum development for the qualification concerned.

1.3.4. Study visits

To illustrate the findings with empirical material on learning practices, two study visits were organised in two vocational schools in Germany ⁽³⁾ and in the Netherlands ⁽⁴⁾: these included qualitative semi-structured interviews with logistics teachers and a quantitative survey among logistics students. Both national systems have a long VET tradition and introduced a competence-based approach in VET curricula in the late 1980s and 1990s respectively. As curriculum reforms need time to unveil their effects in teaching and learning, this was considered an important selection criterion. While these two study visits cannot be considered as offering representative data on teaching/training and learning practices, they may help to raise new issues and questions for further studies on the potential gap between formal arrangements and actual practices.

⁽³⁾ In Germany, the study visit was conducted in the consortium of vocational schools Berufsbildende Schulen Oschersleben, Europaschule, which has 534 logistics students: 58 students in a logistics apprenticeship programme answered the questionnaire, and 12 logistics teachers were interviewed. In addition, a teacher interview was also conducted with two logistics teachers from the vocational school Staatliche Gewerbeschule Werft und Hafen in Hamburg, where 250 students are enrolled in the programme *Fachkraft für Lagerlogistik*.

⁽⁴⁾ In the Netherlands, the study visit took place in the ROC (Regionaal Opleidings-Centrum) Rijn IJssel in Arnhem. The ROC Rijn IJssel works in a consortium with four other ROCs. Together, these ROCS design and implement apprenticeship programmes accounting for 80% of all students graduating as *logistiek teamleider* in the Netherlands. There are 50 students presently enrolled in Rijn IJssel in this programme; 29 took part in the survey.

1.3.5. Expert workshop

In the final phase of the study, an international workshop *Curriculum innovation and reform: policies and practices* ⁽⁵⁾ was organised by Cedefop (9 to 10 November, 2009) to debate the draft findings of the research study. National VET experts, mainly from the countries under examination, and international education specialists from European and international organisations (Unesco-IBE, OECD-CERI, the World Bank, the European Commission) discussed developments in the EU and beyond (see Annex 2). The outcomes of the workshop were used to elaborate the conclusions and considerations for policy-makers, practitioners and researchers and are presented in the concluding part of this report.

1.4. Challenges and limitations

The main challenges and limitations of the study lie in the difficulties in interpreting the findings in a comparative and representative way.

The first challenge arises from the difficulty in identifying clear causal links between learning outcomes in curricula and the learner-centred character of teaching and learning practices. This difficulty is heightened by the communicative nature of teaching and learning processes, which are influenced by a wide range of contextual factors from the macro- to the micro-level. This study focuses on one major element of the framework in which this communicative process takes place, i.e. the written curriculum. The main challenge is, therefore, to avoid being misled by 'formal arrangements' and missing information on informal practices (see Section 5.2 and Pätzold et al., 2003a). Study visits and interviews allowed reflection on the written curriculum from a different perspective: how do teachers use the curriculum to plan their lessons; and what are the teaching and learning methods experienced by learners? Given the explorative nature of the study, the empirical basis does not allow us to draw generalised conclusions on the direct impact of learning outcomes on education and training processes. The value of the case studies lies in the illustration they provide of findings from desk-based research and in the questioning of these findings, pointing to possible contradictions and gaps between the initial goals of curriculum reforms and their effects on practice.

A second challenge is interpreting the findings in a comparative way between different countries. This problem can only be partly solved through

⁽⁵⁾ <http://www.cedefop.europa.eu/etv/News/default.asp?idnews=4846> [cited 1.12.2009].

careful definition of the main concepts of the study, such as the concepts of curriculum or competence, which are often taken for granted in a specific national context. Even when common trends and similar approaches are identified, the particularity of each national VET system, and national educational values, aims and traditions, call for caution and modesty as soon as it comes to reflecting on practical implications and recommendations for policy-making.

A third challenge originates from the fragmentation and diversity within national VET systems. This made difficult an in-depth comparison between developments in VET, general education and higher education. Especially in CVET, the diversity of training providers, and the fact that many of them are part of the private sector, makes the access to information on learning programmes and teaching practices difficult and time-consuming. This was especially so for Ireland and the UK-Scotland, where training providers have much autonomy in curriculum matters. This is why the study focused, from the beginning, on IVET and its scope is limited in CVET to those parts of the curriculum regulated by public authorities, allowing for general but not representative remarks.

Finally, there was difficulty in validating the information collected through primary research. The responses from interviewees had cross-referenced with findings from literature reviews and desk-based research to be validated. Where this was not possible because of lack of existing sources, the answers must be treated carefully, as they reflect an individual's perception.

2. Rationale for using learning outcomes in VET curricula and learning programmes

To understand the implications of the increasing EU policy focus on learning outcomes for curricula and learning programmes, it is necessary to turn first to the rationale for the introduction of outcome-oriented approaches to VET. What are the expectations from learning outcomes in curricula? The rationales can be traced back to four main lines of argument. From the scientific side, the justification is provided by learning theories and findings about learning and how the brain works (see 2.1). Another motivation is to strengthen the link between education and the labour market (see 2.2). A third background to curriculum reforms and outcome-oriented approaches are the new modes of public management and governance introduced for steering VET systems (see 2.3). Finally, European policy developments to increase the transparency of qualifications and to aid mobility are a major factor (see 2.4).

2.1. Learning theories focusing on competences and learning outcomes

To understand the introduction of learning outcomes in curricula, the concept of learning outcome must be placed in the context of theories on learning and teaching which have been influencing curriculum reforms in recent decades. Starting from a definition of 'learning' and theories on how the brain works, different schools of thought have developed diverging pedagogical and didactical approaches, with implications for curriculum design and the operation of learning outcomes in curricula.

In the past 25 years, cognitive research has provided important findings about the brain, with scientists being able to examine its internal organisation and processes. The findings have provided an insight which allows researchers to observe how and where information is manipulated in the learning process. One finding is that the brain makes sense of the world by constructing meaning from the information around it. It connects held information to the new concept that it is trying to understand. The metaphor of the brain as a computer with connected networks is often used to describe the functioning of the brain cells and

transmitting procedures, but recent research suggests that the brain is more like a 'regulated jungle'. However, important to educators is the whole-brain approach, replacing the older partition models in which certain functions were assumed to be isolated in specific parts of the brain. Understanding how the brain learns – by acquiring, sorting, and conserving information – allows educators to devise the appropriate kinds of instruction and environments that activate the brain's natural abilities and promote student learning (Gregory and Parry, 2006). According to these findings, connections between different concepts must be made explicit and learners must have the opportunity to make their own connections by engaging in discussions and activities that promote the concepts of formation and comprehension. *Schools, therefore, need to provide a rich variety of experiences that activate students' brains. This is compatible with the brain's genetic disposition to thrive on complexity and to use a multisensory or parallel processing approach to derive meaning from complex situations. Therefore, the most favourable learning activities to activate neural networks are those that are complex, engage a variety of the senses, and are perceived by the learner as being novel, emotionally engaging, relevant, and useful* (Gregory and Parry, 2006, p. 32). As early as 1991, Caine and Caine formulated features of brain-based learning; students should have many choices for activities and projects and foster patterning by drawing relationships through the use of metaphor and demonstrations. Therefore, teaching methods should be complex, lifelike and integrated, using different media and materials. Brain-based learning should encourage the brain's ability to integrate information and *involve the entire learning in a challenging learning process that simultaneously engages the intellect, creativity, emotions and physiology* (Caine and Caine, 1991, p. 8).

As this brief overview shows, the different definitions and understandings of learning are closely linked to the underlying theories on learning. These theories can be classified in three main streams: behaviourism, cognitivism and constructivism.

2.1.1. Behaviourism

Behaviourism is a theoretical approach in psychology that focuses on the study of outwardly observable behaviour as reactions to a stimulus. Behaviourism states that all behaviour can be explained without considering internal mental states or consciousness. The human brain is considered to be a 'black box' which means that only the input (stimulus) and the output (observable behaviour) can be detected; mental learning processes cannot be successfully described ('black-box paradigm'). Although most behaviourists did not disclaim the existence of mental activity, they put emphasis on observable behaviour in their

studies. Behaviourists assume the learner to be essentially passive, responding only to environmental stimuli (Schuman and Ritchie, 1996). Behaviourism traces its roots back to the work of Ivan Pavlov (1849-1936), who developed a series of experiments to understand learning in terms of the physiological process of conditioning, or reflex responses. Behaviourism (1910-30) was dominated by the works of John B. Watson, Edward L. Thorndike and later by neo-behaviourism (1930-55), which was defined by the psychologists Edward C. Tolman, Clark Hull, and B.F. Skinner. The behaviourist approaches can also be separated in classical conditioning and operant conditioning. The main difference is that classical conditioning deals with conditioning of respondent behaviours (response) which are caused by previous conditions (stimulus). Operant conditioning studies the modification of voluntary behaviour initiated by reinforcement, punishment and extinction (Sackney and Mergel, 2007).

According to the underlying assumptions, learning outcomes in the sense of behavioural objectives have to be described in specified, quantifiable and measurable terms. For the development of these behavioural objectives, complex learning tasks must be broken down into specific measurable tasks. Learning success is assessed using tests to measure the achievement of each task (Sackney and Mergel, 2007). The impact of behaviourism on curriculum design becomes apparent in the works of Bobbitt, Tyler and Skinner. Skinner's work on the programmed instructions and the underlying principles, like small instruction sequences, participation of the students, reinforcement and the determining the pace of learning through the students, led to productive research on the improvement of teaching, learning and training methods in the US. The behaviourist approach points out the clear identification and measurement of learning and the necessity to produce observable and measurable outcomes (Adam, 2004). Franklin Bobbitt was the first to develop a concept of behavioural objectives in the early 1900s, but the term 'behavioural objectives' may be misleading, since the objectives/tasks usually also include a cognitive element. In 1956 Bloom and his colleagues developed a taxonomy distinguishing between the cognitive, attitudinal (affective) and psychomotor domains, and between the levels knowledge, comprehension, application, analysis, synthesis and evaluation (Saettler, 1990). Bloom's taxonomy remains the most widely used for describing learning outcomes and assessment criteria. The increasing establishment of national qualification frameworks and use of outcome-based approaches for the design of curricula, make the use of this taxonomy very popular in EU Member States, for instance in Slovenia (Cedefop, 2009b, p. 40).

2.1.2. Cognitivism

As research on the mechanisms of learning progressed, cognitivism ⁽⁶⁾ replaced behaviourism in the 1960s as the dominant paradigm. Instead of explaining human activities only by means of stimulus and response, cognitivism focuses on the mental activities of the learner and tries to open the 'black box' to understand how people learn. Cognitivism tries to explain the intellectual capacities of individuals by assuming inner mental processes which combine semantic content and causal power to affect behaviour. The observed changes in behaviour are interpreted as an indication of what is happening in the learner's head. The metaphor of the mind as a computer is often used to describe the underlying assumption: information comes in, is being processed, and leads to certain outcomes. Cognitivists aim to explore these mental processes and refer to terms like thinking, memory, knowledge, and problem-solving. Knowledge is indicated as a schema or a symbolic mental construction. So cognitivists view learning as involving the acquisition or reorganisation of the cognitive structures through which individuals process and store information. In this approach, learning is defined as the change in the learner's internal knowledge structure ('schemata'). The learner compares new information to his cognitive structures, which he extends or alters to accommodate it (Good and Brophy, 1990).

The shift from observable external behaviour to the internal mental processes for effective learning also influences curriculum design. But the transition from behaviourist to cognitivist approaches was not as challenging as it seems at first glance; both theories are governed by an objectivist view of knowledge, i.e. (learning) objects exist independently of the learner's mind and of his individual constructions. Even the goal of instruction remained the same: the transfer of knowledge to learners in the most efficient way. Therefore the behaviourist design models were only slightly adapted to the new approach. Instead of developing the task analysis, which aims at separating functions, the cognitivist method analyses a task and breaks it down into smaller units of information to develop instructions that move from simple to more complex units based on prior knowledge (Sackney and Mergel, 2007; Saettler, 1990).

2.1.3. Constructivism

Rooted in cognitive science, the constructivist epistemology emerges from areas such as psychology, philosophy and physical science. The constructivist pedagogy is especially formed by the ideas of John Dewey, Lev Vygotsky, the

⁽⁶⁾ Some of the main cognitivist theorists are Asubel, Bandura, Bruner and the early works of Piaget.

later work of Jean Piaget, Jerome Bruner, and Ernst von Glasersfeld but its origins can be traced back to philosophers like Vico and Kant (Yilmaz, 2008). Constructivism evolved from cognitivism, therefore both approaches share several similarities. Both theories recognise the concept of schema and build on prior knowledge and experience. The greatest difference is the underlying epistemology. Cognitivism is based on objectivism, constructivism is based on subjectivism; constructivists assume reality to be social and constructed in the minds of the individual, meaning that learners construct their own reality based on previous experiences, mental structures and beliefs that are deployed to interpret social reality. The learner's knowledge is grounded in his perception of the physical and social experiences as reproduced by his mind. Therefore, constructivism is descriptive rather than prescriptive; it does not prescribe rigid outcomes, rules or procedures for designing a learning environment (Anthony, 1996).

Constructivism does not represent a single school of thought. There are several versions and categories, such as sociological, psychological and radical constructivism. Hoy and Miskel distinguish three different approaches: rational, radical and dialectical constructivism (Yilmaz, 2008). Ernest (2006) identifies four philosophies: 'simple' constructivism, radical constructivism, enactivism and social constructivism. The binding link between these philosophies is the shift in the view of the learner from a passive recipient of knowledge to an active constructor of knowledge. Learning is assumed to be a process of knowledge construction and a construction of new knowledge based on current knowledge. The learner is assumed to be aware of the processes of cognition, so able to control and regulate it; this self-awareness significantly influences the process of learning (Sackney and Mergel, 2007; Anthony, 1996). This implies a shift from teaching to learning and puts the learner and his capacities, interests and needs in the centre. According to this new paradigm, it is suggested to replace traditional learning processes by active learning approaches. In this context, the term 'active' means that learning activities shall be provided in which students have [...] *considerable autonomy and control of the direction of the learning activities* (Anthony, 1996, p. 350). Another argument is that learning should be situated in realistic settings to which assessment should be also integrated (Sackney and Mergel, 2007).

The shift from behaviourism to cognitivism does not seem as challenging as the move towards constructivism, since behaviourism and cognitivism are both objectivist and support task analysis to develop measurable objectives for assessment. Objectivist theories use prescribed learning outcomes in curricula; the teacher intervenes in the learning process to map this goal in the reality of the

learner's mind. In contrast, constructivism, promotes a more open-ended learning experience where the methods and results of learning are not easily measured and may, in fact, not be the same for each learner (Sackney and Mergel, 2007, p. 84). Designing curricula from a constructivist viewpoint requires that the designers produce a product that is more facilitative in nature; learning outcomes are not always calculable and teaching should foster and not control the learning process. This has also an impact on learner assessment, which should be much more subjective and should focus on the process and self-evaluation of the learner. Instead of traditional assessment methods, assessment in a constructivist environment may be more performance-based and include portfolios or projects (Yilmaz, 2008).

Constructivism puts emphasis on the learning process and not on the learning outcome. The learning activities and environment should be structured in a way that learners can create and control the development of their own learning. In this perspective, the function of teachers and trainers are closer to guidance and coaching than to instruction. The teacher becomes a facilitator of the learning process, and the learner is asked to manage his learning (Yilmaz, 2008). Some examples for didactic approaches to constructivism include investigational work, situated learning, problem-based learning, experimental learning, and action learning. For vocational education and training, situated learning was one major turning point for lifting the importance of the workplace as a site for learning. The situated learning approach argues that individuals learn in social groups through active participation. In the workplace they learn by dealing with real tasks within a 'community of practice' and coaching by experts. Further work-based approaches are critical learning, transformative learning and learning by expansion. These concepts have in common that they refer to a kind of learning which implies that learners are becoming more critical and more aware of their own assumptions and expectations and those of others by reflecting and assessing them, which leads them to develop a new understanding (Illeris, 2003; Unwin, 2009).

It is assumed that the shift to learning outcomes is also a shift from teaching to learning. As presented, the learner-centred approach is inherent to constructivist learning theories, which put the learner and his individuality as the focus of the learning and teaching processes. But the use of learning outcomes does not automatically result in this shift. The link between learning outcomes and learner-centred approaches depends on the underlying concept of outcomes or competences. If prescribed learning outcomes follow a narrow concept of (professional) competence, which refers to specialised skills, knowledge, methods, and attitudes that build the basis for a certain qualification, this would

not reflect the image of a holistic and autonomous learner guided by constructivism but would fit more into objective learning theories. To match constructivist learning theories, the outcomes would have to follow a holistic, generalising concept of competence which is viewed from the perspective of the individual and his or her personality and capabilities. As a learner-oriented concept, it shall also include an educational dimension.

Nevertheless, the problem remains that the necessity of prescribed 'objective' learning outcomes in assuring the quality and value of professional certificates (focus on the product) does not match clearly the view of the constructivist approach which claims that outcomes of a learning process cannot be prescribed because they are constructed in the learner's mind according to his individuality. Therefore, the suitability of constructivist learning theories for the planning of learning processes is limited.

Chapter 3 will show how these different theories and concepts of learning have influenced the reforms in the countries under examination.

2.2. Linking education and the labour market through learning outcomes and a competence-based approach

The current economic crisis made even more urgent the need for lifelong learning to support individuals throughout their lives. The European Union has seen unemployment rise by 5.4 million to 21.8 million between March 2008 and August 2009, but the recession has not struck evenly. Unemployment in the 16-country euro area, at 15 million, is the highest over the last 10 years. No sector seems immune but the construction, automotive and banking and finance sectors have been hard hit in many Member States (Cedefop, 2009a).

Although recessions often bring temptation to cut back investment in people, a survey in Member States carried out during the Swedish Presidency ⁽⁷⁾ indicates that great efforts are being made to preserve and even improve Europe's skills. Many measures reinforce work-based learning or aim to support self-employment. To empower individuals to develop their own learning pathways, possibilities for validation and recognition of various types of learning at various stages as well as guidance throughout life, are offered in more national systems. The development of national qualifications frameworks, based on learning outcomes, to create favourable contexts for these possibilities to be

⁽⁷⁾ http://www.se2009.eu/en/meetings_news/2009/11/12/1.23798 [cited 2.7.2010].

realised, continues to prove that education and training remains an important priority even in economic downturn.

Other economic crises during recent decades, especially in the 1980s and 1990s, also led to extensive reforms in the various systems of vocational education and training. The shortage of work places, and the need for qualified staff in the new branches and for certain qualifications, both raised questions about the match between vocational education and training programmes and the requirements of the labour market. These new requirements arose from the shift to a service-oriented economy and diverse technological developments, both followed by changes in company organisation and processes. Other factors were social and demographic challenges like migration and decline of the birth rate. Young people were the most affected by these changes. Their transition into the labour market was hindered by the shortage of workplaces and by new requirements which the students were assumed not to meet adequately. Mostly the VET-systems were considered as too 'academic' and not 'realistic' (e.g. Spain, the Netherlands), being traditionally school-based and very much similar to the general/academic system (e.g. France). Traditional qualifications and the classical ways of instruction did not seem to cope with the needs emerging in the modern economy and with the new forms of labour organisation. To cope with these challenges, curricular reforms (in all the countries analysed) largely aimed at strengthening the match between the educational offer and employment requirements.

One way of bringing VET closer to the labour market is the involvement of companies in education programmes through phases of workplace learning in companies (e.g. Spain, France, the Netherlands, UK-Scotland). Following this strategy, work-based learning and alternating programmes (re)gained importance (e.g. the Netherlands, Poland, Slovenia). In this context, learning outcomes played a crucial role in curricula in aiding coordination between school-based and work-based learning.

Another approach to bridging the divide between the knowledge, skills and competence acquired in education and those required in the labour market is by emphasising desired competences and outcomes in curricula without prescriptions for the learning processes. This can assist different individualised learning paths, which include various kinds of learning and teaching (Biemans et al., 2004).

2.3. Steering VET systems through outcome-based curricula

The curriculum is an essential instrument for steering the education system. In this context, learning outcomes used in curricula can be considered as standards (i.e. norms and specifications), insofar as they fulfil a normative function. The introduction of learning outcomes in VET curricula must, therefore, be examined also in the context of new trends in public management and VET governance, which provided another incentive for curriculum reforms.

Following North (1990), intended learning outcomes defined in curricula can be considered as ‘adjustment factors of action’ influencing the behaviour of actors in training and education. Standards based on learning outcomes are expected to develop their regulating function primarily via the determination of the effects of learning. The results of education processes are then defined by learning outcomes.

In the context of debates about ‘governance’ or ‘new governance’ (Fukuyama, 2005; Bache, 2005), VET systems can be considered as subject to a plural steering logic. Different types of steering logics (e.g. market-based and state-based steering) are entangled with each other, leading to different modes of regulation of interests between the stakeholders (employers, VET providers, students, etc.) in each system (Bertelsmann-Stiftung, 2009, p. 26). From the public administration studies point of view, plural steering logics combine ‘input regulation’ and ‘output regulation’. An input regulation occurs primarily through regulative norms and the allocation of resources, whereas output regulation occurs primarily result-oriented and through assessment of achieved performances and products (Stöbe-Blossey, 2001).

Educational processes are traditionally regulated through ‘inputs’, which means via the regulation of the contexts of societal actions. Curricula defining subject-related knowledge to be transmitted are classic instruments of the input regulation of education and training. With this type of regulation, VET providers (including teachers) are responsible, but not accountable for the learner’s achievement: *Not the fulfilment of a plan but the conformity of a plan has to be controlled and accounted for* (Künzli, 1999, p. 24). In this, the input curriculum opens up a relatively wide leeway for the organisation, execution and control of the lessons which, at the same time, have to be fulfilled in a more individual responsibility.

Attempts to define outputs and outcomes can be traced back to the definition of ‘learning objectives’ in the 1960s and 1970s, for instance in Unites States and Great Britain. The product orientation, without disqualifying steering through

inputs, represents a shift in control and accountability concerning learning results. In this context, the use of learning outcomes represents a regulative and didactic change of perspective (Sloane, 2007). The difference between 'learning outcomes' and 'learning objectives' is usually defined with regard to implied design constraints in the learning process. Learning outcomes are seen as much broader and formulated in a more open way than learning objectives, giving the training providers and teachers more room for meeting learners' needs than learning objectives.

This trend towards output-based steering in education and training systems is becoming evident in many European countries by defining educational and/or occupational standards and curricula based on learning outcomes, and by introducing performance-based funding mechanisms (Cedefop, 2009d, p 18).

Finally, the use of learning outcomes in curricula is also seen in the context of quality assurance debates as a promising approach in many countries (Cedefop, 2008c). A commonly agreed thesis is that steering only through input factors is not sufficient to ensure better quality and relevance in education and training, and that more importance must be granted to the 'output' of educational systems, specifically the 'outcome' of learning processes (Blömeke, Herzig and Tulodziecki, 2007). This point of view goes back to an economy-based concept of quality management which sub-divides quality in the levels input, process and output/outcome factors. Inputs represent the resources allocated to the learning process (curriculum, human resources and spatial conditions, etc.) and then processed into results/outcomes (educational design, school organisation, etc.) output-/outcome factors determine the performance outcomes (learning results, rate of qualifications, school career success, etc.) (Euler, 2005, p. 14).

2.4. EU policy on transparency and international mobility

Learning outcomes are the core mechanism of European instruments aiming at the *transparency, comparability, transferability and recognition of competences and/or qualifications, between different countries and at different levels* (European Commission, 2002). As common language or currency, learning outcomes are expected to aid mobility between the varied VET systems of different countries as well as between sectors and levels of education within countries. *European tools aim at removing geographical, institutional and sectoral barriers to education, training and learning. This is important for easing access to lifelong learning, promoting smooth learning progression and enabling the valuing*

and recognition of learning. The fundamental basis to these instruments and a key to achieving these ambitious objectives is the shift to a learning outcome-based approach (Cedefop, 2009d, p. 106). To implement European instruments such as the European qualifications framework, the European credit system for VET and the European quality assurance reference framework, countries are encouraged to define national qualification frameworks and qualification standards based on learning outcomes.

As they provide the basis for assessment and certification, qualification frameworks and qualification standards can be expected to exert an influence on teaching and learning. According to the broad definition of curriculum adopted in this study, qualification standards can be considered as part of the curriculum, since they contribute to steering the learning process and are related (or should ideally be related) to the other elements of the curriculum. Previous research has already revealed evidence on developments towards adopting qualification standards and national qualification frameworks based on learning outcomes in many European countries (Cedefop, 2009c).

At the same time, the Lisbon Summit goal to make Europe *the most competitive and dynamic knowledge-based economy in the world* (European Council, 2000), prompted the European Commission to formulate five concrete objectives with profound implications for VET curricula (European Commission, 2001):

- (a) improvement of educational standards in Europe;
- (b) easier access to learning in all phases of life;
- (c) actualisation of the definition of basic skills for the knowledge society;
- (d) opening of general and vocational training to the local environment, to Europe and to the world;
- (e) the best possible use of resources.

These objectives are further concretised in the Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training 2020 (European Council, 2009). VET reforms should contribute to making lifelong learning and mobility a reality, improving the quality and efficiency of education and training, promoting equity, social cohesion and active citizenship, and encouraging creativity and innovation, including entrepreneurship at all levels of education and training. The use of learning outcomes in curricula is explicitly cited as one major contributor to these aims. The importance of curricula is acknowledged for enhancing learner achievements throughout life, and for creating a stronger link between the education system and its social, economic and cultural environment. This can be interpreted as calling for the establishment of more learner-centred VET systems, both in institutional and

pedagogical-didactic aspects. As demonstrated above (see points 2.1 and 2.2), learning outcomes and competence-based curricula are expected to contribute to reaching these objectives.

Hence, European strategies and instruments are an important background and motivation for reforming VET curricula by introducing learning outcomes. In the country studies, this was found to be especially true for those countries which did not develop their own national approach to competence-based education and to learning outcomes until recently. Poland, Romania and Slovenia provide good examples of such countries trying to adopt European terminology and instruments in the wake of radical reforms of the entire VET system, supported by European funds. Countries with an older tradition of competence-based curricula, such as France and Germany, are also making reforms to cope with EU developments and new requirements, preserving their own understanding of learning outcomes and competences.

An additional example of European influences on the introduction of learning outcomes in VET curricula is provided in Ireland with the development of the Leaving certificate applied curriculum funded by the European Social Fund in the 1990s. This displays all the characteristics of an outcome-oriented curriculum, encouraging active learning and strong orientation on the learner's needs and capacities. In higher education, the Tuning ⁽⁸⁾ and he_leo ⁽⁹⁾ Leonardo da Vinci pilot projects aim at introducing learning outcomes and competence-based education in academic curricula, while some earlier Leonardo da Vinci projects have also led to the development of curricula based on learning outcomes (see for instance the project based on the methodology of *professionnalisation durable* (Dufresne, 2004) or *Kernberufe* (Blings and Spöttl, 2003).

European VET developments are an important background for the introduction of learning outcomes in curricula. European tools require countries to introduce learning outcomes in validation and certification processes to encourage transparency and mobility; this, in turn, implies defining qualification standards based on learning outcomes. In addition, the EU directly supports curriculum reforms through the financing of pilot projects and reform programmes, contributing to the diffusion of 'good practice' in relation to the outcome-oriented approach underpinning its policies. Beyond this top-down

⁽⁸⁾ Tuning educational structures in Europe started in 2000 as a project has developed into a process to (re-) design, implement and evaluate quality first, second and third cycle degree programmes in higher education (<http://tuning.unideusto.org/tuningeu/>).

⁽⁹⁾ he_leo is a Leonardo da Vinci pilot project testing the implementation of competence orientation and learning outcomes in higher education (<http://www.he-leo-project.eu/>).

process, it could also be interesting to look for national influences on the EU approach to learning outcomes, or at least for parallel developments. Boudier and Kirsch, (2007), for instance, show how developments in France and the EU have been partly parallel and, in some cases, France has been a precursor.

3. Learning outcomes in current curriculum reforms

Alongside the variety of backgrounds and rationales for introducing learning outcomes in curricula, there is a corresponding variety of understandings and functions ascribed to learning outcomes in the countries examined in this study. This diversity has, in turn, important implications for the design of curricula, teaching methods and materials and for assessing learners. These three strongly interrelated thematic areas will be discussed in this chapter.

3.1. Learning outcomes: diverse definitions and functions

In analysing how individual countries and systems conceptualise learning outcomes, we took as a starting point the definition given in the European qualifications framework (EQF) and in the European credit system for VET (ECVET). The comparative analysis of nine European countries reveals that all have introduced learning outcomes in VET curricula to some extent, but with important divergences in definition, function and operation. This raises the question of whether a single term is adequate.

3.1.1. Theoretical background and understanding of learning outcomes

Comparison of national documentation reveals striking differences in the terms used to designate learning outcomes. These differences are worth noting, as they partly reflect different aims, values, cultures and theoretical approaches. Also, different understandings and definitions of learning outcomes may coexist within the same country between the different types of education and training.

In the UK, the term learning outcomes has long been accepted in relation to the development of national/Scottish vocational qualifications (N/SVQs), which were introduced in 1986. These qualifications are based on standards derived from functional analysis of jobs and constitute a benchmark against which an individual's performance can be judged in a work context. This type of learning outcomes is focused on observable performance and achievement at the workplace rather than on the cognitive dispositions and qualities of the person.

Parallel to this 'functionalist' understanding of learning outcomes, a more 'holistic' concept is to be found in the Scottish Curriculum for excellence, which has been developed out of a broad consultation exercise in 2002. The term 'outcomes' is associated with 'experiences', linking 'what is to be achieved' to the quality and nature of learning experiences. Experiences and outcomes together embody the competences associated with the four roles of learners as responsible citizen, successful learners, effective contributors and confident individuals. Outcomes and experiences in this sense are not measurable standards.

In Ireland, learning outcomes were first introduced in the apprenticeship system in 1991. However, it is only with the national framework of qualifications launched in 2003, that the definition and use of the term learning outcome was systematically reflected in policy. The definition adopted in qualification standards and level descriptors is close to the EQF definition, with its three dimensions of knowledge, skills and competence. Competence is defined by the National Qualification Authority of Ireland (NQAI) as the practical application of knowledge and skill: *Competence is the effective and creative demonstration and deployment of knowledge and skill in human situations. Such situations could comprise general social and civic ones, as well as specific occupational ones. Competence draws on attitudes, emotions, values and sense of self-efficacy of the learner, as well as on declarative and procedural knowledge* ⁽¹⁰⁾. The NQAI stresses that learning outcomes, when used in qualification standards, must cover 'all relevant and measurable learning'. But NQAI policy documents also acknowledge that *not all forms of learning that contribute to enabling a learner to perform in context can feasibly or reliably be captured by the assessment methods available. While such learning is important, and may be part of the desired learning outcomes for a programme of education and training, it cannot be compared against standards and as such cannot form part of the award standards for the inclusion of awards in the framework* (NQAI, 2003, p. 23). A theoretical distinction is thus made between outcome-based qualification standards, which have to be assessed, and the desired learning outcomes, which are also contained in curricula and learning programmes.

In France, the term learning outcomes is not literally translated as *résultats d'apprentissage*, but instead the term *compétence* is usually used. Most authors writing on competences (Houchot, Jonnaert, Perrenoud), be they members of academia or of the education system itself (inspectors, teachers, etc.), conclude that there is no real agreement yet on defining 'competence'. Indeed, official

⁽¹⁰⁾ NQAI Glossary http://www.nqai.ie/framework_glossary.html [cited 9.10.2009].

policy documents, qualification standards, syllabuses and evaluation tools refer to different definitions and to different theoretical approaches to learning.

Usually, two approaches describe the shift currently taking place in curricula from a teacher-centred paradigm based on the definition of learning objectives to a learner-centred paradigm based on the concept of *compétence*.

First, the behaviouristic approach (analysed in session 2.1), associated with 'pedagogy by objectives' and traced back to Ralph Tyler (Tyler, 1935) has been largely adopted in the French education system since the 1960s. This focuses on observable and measurable learning outcomes, and considers pedagogy to be simply a question of methods and tools⁽¹¹⁾. All the competences to be acquired are systematically defined according to a taxonomy, with general and specific objectives defining the behaviour to be demonstrated by the learner (use of active verbs, formulation of a task, etc.), the conditions for executing the tasks (equipment, time allocated, materials, etc.), and the success criteria. This approach is reflected in assessment standards (*référentiel de certification*) introduced in IVET in 1985 with the creation of the *Baccalauréat professionnel*.

By contrast, the competence-based approach refers to constructivist theories that are based on the assumption that competences are developed by the learner through acting in a situation and reflecting on the action (Jonnaert et al., 2005, p. 16). This approach is characterised by the definition of competences in relation to situations, which constitute 'the point of departure for classroom learning' (Jonnaert et al., 2007, p. 199). The competence approach in curriculum entails an interdisciplinary approach in its design: curricula are not organised based on academic disciplines, but according to the logic of competences.

According to these authors, the concept of *compétence* in France has been changing over time, starting in a behaviouristic context (pedagogy by objectives) and evolving to integrate increasingly the results of constructivist theories. At least, a consensus seems to exist now regarding the main dimensions of competence-based approaches, even if implementation sometimes lags behind theoretical discourses (Houchot and Robine, 2007):

- (a) transversality: competences are not bound to one specific academic discipline and they concern various situations;
- (b) contextualisation/decontextualisation: competences must be developed and evaluated in situations as close as possible to real life;
- (c) complexity: tasks and situations requiring competences are increasingly complex, requiring individuals to use different resources, such as knowledge, know-how, abilities, and attitudes;

(11) http://cueep.univ-lille1.fr/pedagogie/La_PPO.htm [cited 9.4.2010].

(d) integration: competences integrate various disciplines and aspects (abilities, attitudes, knowledge).

This competence-based approach in curricula determines the whole approach to curriculum design and pedagogy in VET and general education in France.

In Germany, there are controversial debates on the use, and the definition, of learning outcomes ⁽¹²⁾. The main argument against the use of learning outcomes is that they potentially undermine the dual system by shifting attention from work-based learning processes, curricula and institutions to the sole assessment of learning outcomes. They also question the principle of vocation (*Beruf*) by opening the way to partial qualifications. Until now, the specific term learning outcomes (*Lernergebnisse*) has been used only in prevocational education and training, providing modularised training programmes for young people who did not find an apprenticeship in the dual system (*Berufsausbildungsvorbereitung; Qualifizierungsbausteine*). In this context, it is associated with the idea of standardisation. Although the term 'outcome' is not used as such in the dual system, it is nevertheless possible to identify a strong outcome-orientation in curricula and qualifications in this segment of VET. First, vocational competence (*berufliche Handlungsfähigkeit* and *Handlungskompetenz*) has been defined since 1996 as the overarching goal of VET in the dual system and can be interpreted as a form of very general, holistic learning outcome. Vocational competence is understood as an integrated capacity, based on knowledge, skills, capabilities and experience to solve complex demands in work, learning, personal and societal situations. Vocational competence is predominantly described as a cluster of technical, methodical, social and personal dimensions integrating learning and methodological competences (Bader and Müller, 2002). Based on the concept of complete action, it includes autonomous planning, performing, evaluating and reflection of occupational actions. Second, the learning and training objectives assigned to work-based VET in the dual system, even before the reform of 1996, are *statements of what a learner knows and is able to do after completion of a learning process*. They are developed from work process analysis rather than formulated from academic disciplines and map the 'skills and knowledge' necessary to attain vocational competence in a given occupation.

In the Netherlands, competence is also preferred to learning outcomes. Competence-based education was introduced following the new Adult Education

⁽¹²⁾ A brief insight in the debates is provided by Prof. Dr. Herrmann Schmidt, former president of the BIBB, in <http://www.denk-doch-mal.de/node/49> [cited 9.4.2010].

and Vocational Education and Training Act (WEB) in 1996 and the aim is to implement this approach fully in all parts of the VET system by 2010. Competence refers not only to professional skills, but also to the capacity of individuals to progress in education and training and to their role in organisations and society as a whole. In scientific discourses, a reductionist and mechanistic definition of competence, tied too strongly to performance in a specific job, is strongly opposed and most researchers agree on the need to take a holistic approach to competence. Starting from the question of what work demands from a person, *Dutch researchers tend to cover a wide area of human behaviour in their definition of competences in terms of knowing, wanting, being and being able. For Mulder (2004) for instance, a person's competences comprise integrated performance-oriented capabilities, consisting of clusters of knowledge structures, but also cognitive, interactive, affective and, if necessary, psychomotor capabilities, as well as attitudes and values. All are required for carrying out tasks, problem solving and, more generally, effectively functioning in a certain profession, organisation, position or role* (Westerhuis, 2007, p. 4). In VET, competences are understood as multidimensional, having their roots in personal characteristics, values and beliefs. Hövels (2004) stresses four key-features of competences as understood in the Dutch VET system:

- (a) action-orientation: problem solving abilities;
- (b) holistic-individual orientation: abilities of an individual as an authentic person;
- (c) dynamic orientation: lifelong learning and development of competences;
- (d) integrative nature: integration of cognitive elements, attitude and skills.

In Spain, competence (*competencia*) and capacity (*capacidades*) are used rather than learning outcomes. The term learning outcomes is not very common in the Spanish education system as this is not specifically mentioned in Spain's responses to EU questionnaires. The term professional competence (*competencia profesional*) marks the educational goals and learning objectives specified by capacities (*capacidades*). Both terms refer almost exclusively to functional tasks and are associated with performance criteria (Cedefop, Winterton et al., 2006, p. 39). Competence covers the whole range of knowledge and capacities that enable someone to perform a professional activity according to the needs of the productive system and employment. Competence is divided into professional, personal and social competences, which describe the set of necessary skills and knowledge to respond to the requirements of the productive sector, to increase employability and promote social cohesion (Real Decreto 1538/2006, Art. 7a, 7b). The introduction of learning outcomes (competences and capacities) to define qualifications was based on the law on general organisation

of the education system (*Ley Orgánica de Ordenación General del Sistema Educativo*, LOGSE), which was adopted with the primary aim of reinforcing the link between education and the labour market.

In Poland and Slovenia, outcome-based approaches have recently been introduced in curricula, mainly in relation to EU policy instruments and projects.

In Slovenia, curricula in VET started to be shaped towards an outcome-oriented approach in 1996, following two distinct phases. The first, until 2001, was carried out in a Phare programme partially financed by the European Union; a second phase in 2001-07 was based on new guidelines for the development of education from the Ministry of Education, Science and Sport. The terms used to indicate outcomes in Slovenian are competence (*kompetenza*), learning outcomes (*učni izidi*) and objectives (*cilji*). The new curricula are structured around the concept of competence, which is defined in the Slovenian classification system of education and training (Klasius) as *the ability of a person to activate, use and link the knowledge gained in complex, heterogeneous and unpredictable situations* (Klasius, 2006, p. 5). Competences have three dimensions: cognitive, functional and social. The last dimension, reflecting a socialisation perspective, aims at the development of an autonomous and ethical attitude towards other people, community and the environment. It further contains the evolution of responsibility and autonomy. Learning outcomes are defined in the Decree on the introduction and use of the Klasius *the set of knowledge, skills and competences for 'life and work' achieved by learners in the process of formal, informal and non-formal learning* (Cedefop, 2009f, p. 81). The Slovenian classification system of education and training uses further the term *temeljni cilji* (basic objectives) together in one line with *vsebina* (contents) to describe the levels of the classification system. In this sense, the objectives/contents of each level of the educational programmes are defined as knowledge, skills and abilities (Klasius, 2006). Overall, the three dimensions of the EQF definition of learning outcomes are to be found here, with a distinction operated between learning outcomes, which refer to standards, and competences, which refer to the enactment of knowledge, skills and attitudes in a situation.

In Poland, taking further the first steps to introduce learning outcomes in the VET system in 2002, curriculum reforms are under way and will be fully implemented in 2012. There are no home-grown academic traditions and debates on the concept of competence in Poland as can be found in Germany, France or the UK. Therefore, the EQF definition of learning outcomes is strongly supported in official documents. The term *kwalfikacja* is used in core curricula to encompass knowledge and skills expected from learners upon completion of learning, whereas 'education aim' is used to define *What students, as a result of*

education, should be able to do, or understand (curriculum in logistics). The ethical and social dimension of competence, which is theorised by academia (i.e. *postawy*, meaning attitudes or approach), is not explicitly addressed in curricula.

In comparing these definitions, it is possible to identify at least a common agreement on the integrating character of learning outcomes (independently of how they are named in the different languages), which somehow combine functional, cognitive and social/cultural skills. Divergences mainly concern their focus, which can be either on achievement/performance, or on personal qualities. This fundamental difference is related to the function performed by learning outcomes, as a closer look to the curricula of logistics in IVET reveals.

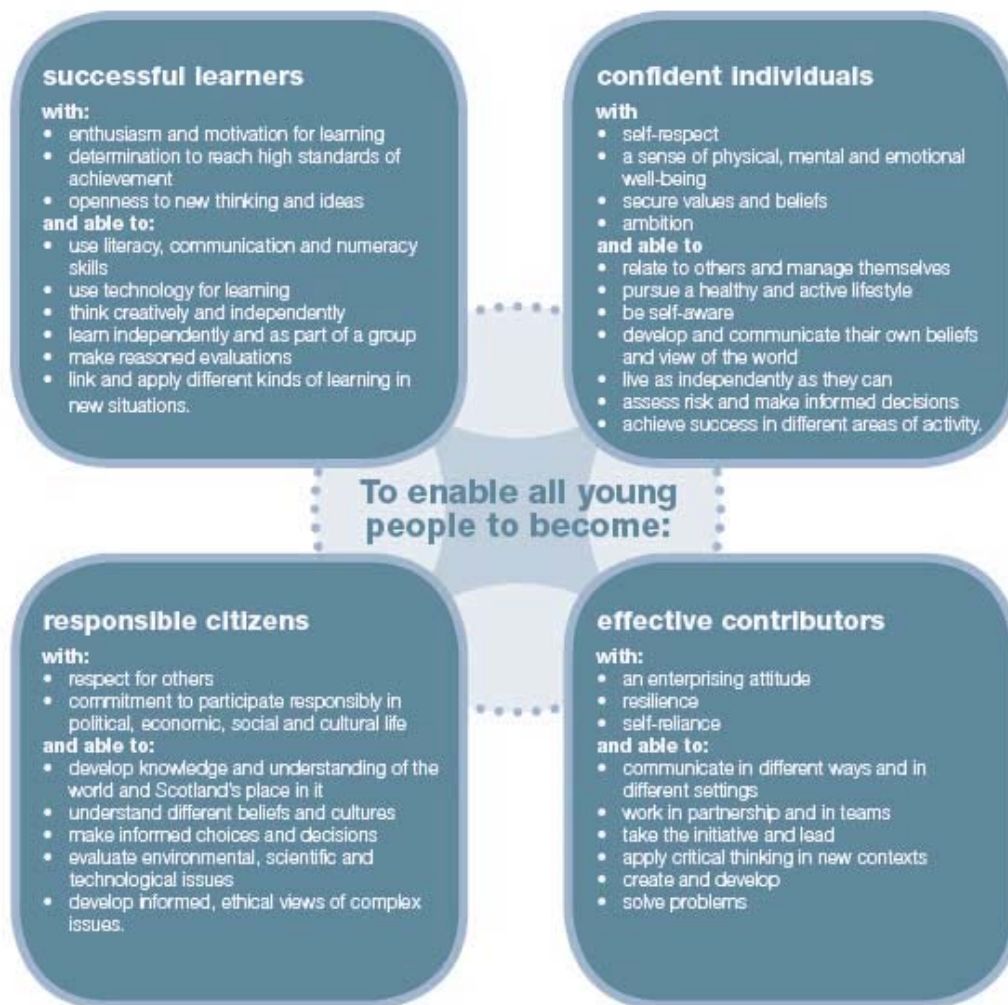
3.1.2. Functions of learning outcomes in logistics curricula

Cedefop's recent study (Cedefop, 2009a) points out that learning outcomes may have different functions in VET, leading to different forms of operation. This was also found to be true for IVET curricula examined in the case study on logistics programmes. Three categories of learning outcomes were identified depending on the function they are ascribed in curricula: defining the overarching goals of education and training, the learning outcomes of a study programme, or the learning outcomes of specific units of training.

In some countries, learning outcomes express the overarching goals of education and training. In this case, they are formulated in broad terms, neither occupation- nor subject-specific. A prominent example of such learning outcomes in VET is offered by Germany, with the concept of vocational competence (*Handlungsfähigkeit* and *Handlungskompetenz*). A similar function is fulfilled by the learning outcomes associated to the 'four capacities' (as successful learners, responsible citizens, confident individuals and effective contributors) included in the Curriculum for excellence in the UK-Scotland (see Figure 4).

Contrary to the concept of vocational competence in Germany, which has been developed for VET curricula only, the 'four capacities' in the Curriculum for excellence are directed at all segments of education for the age-group from three to 18 years old, including general and prevocational education as well as further education. They are described through attitudes and competences (... *able to*: ...) general enough to apply to all age groups. These attitudes and competences, which are a kind of very broad and holistic learning outcomes, are further refined and embedded in the curriculum guidelines for each age group.

Figure 4. The four roles of the Scottish Curriculum for excellence



Source: www.ltscotland.org.uk

In other countries, key competences can also be considered in terms of learning outcomes fulfilling the function of overarching goals of education and training with a transversal character, orienting learning processes regardless of the segment of education or occupational sector. Among the countries studied, five have explicitly adopted a set of key competences: France, Ireland, Poland, Slovenia and the UK-Scotland. Although they are primarily developed for compulsory education, key competences are also relevant to IVET (France, Slovenia), or even to CVET in Ireland and the UK-Scotland. The question raised by these kinds of overarching learning outcomes is how to integrate transversal competences into learning programmes, which are most often divided into either

subjects or occupation-based training units. Two approaches can be distinguished, which do not necessarily exclude each other:

A first approach is adopted in the German dual system and in the Scottish Curriculum for excellence. The overarching goals formulated in terms of competence or outcomes function as guiding principles to develop and assess the other elements of the curriculum and the learning programmes in all subjects and areas. This is expressed in the Curriculum for excellence: *The experiences and outcomes in the range of curriculum areas build in the attributes and capabilities which support the development of the four capacities. This means that, taken together across curriculum areas, the experiences and outcomes contribute to the attributes and capabilities leading to the four capacities. The expanded statements of the four capacities can also form a very useful focus for planning choices and next steps in learning. The attributes and capabilities can be used by establishments as a guide to assess whether the curriculum for any individual child or young person sufficiently reflects the purposes of the curriculum* ⁽¹³⁾. In Germany, the concept of vocational competence is translated into didactical principles which guide the work of curriculum development groups and which are explained in the introductory part of the curriculum for the school-based part of VET.

A second approach is using key competences, which are sometimes broken down to a list of knowledge, skills and attitudes providing a direct basis for assessment. In France, references to each of the seven key competences are included in the syllabuses; recommendations are issued by the education authorities to explain to teachers how to link key competences with subject- or occupation-based learning programmes. A booklet aiming to document the development of key competences in primary and secondary education is being tested. In the UK-Scotland, the Curriculum for excellence includes the five core skills developed in 1995. Curriculum guidelines for compulsory education make clear references to the core skills in order to aid implementation in the learning programmes. National qualifications also include suggestions to teachers for developing core skills in the course of vocational training, whereas SVQs do not. Specific courses are also offered at each level of the Scottish credit and qualifications framework for training in one of the core skills, with the potential to obtain a certificate after assessment. Attainments in the core skills are registered in a core skills profile.

⁽¹³⁾ <http://www.ltscotland.org.uk/curriculumforexcellence/curriculumoverview/aims/fourcapacities.asp> [cited 8.10.2009].

A second function of learning outcomes in curricula is to define the specific competences, skills and knowledge to be reached at the end of a study programme. This function is typically fulfilled by learning outcomes expressed in qualification standards. The standards provide the basis for final assessment and for the planning and implementation of teaching and training actions, and are an integral part of the curriculum. In Ireland, such learning outcomes are included in general standards (level descriptors) and award-specific standards. In the UK-Scotland, qualification standards based on learning outcomes determine the learning programmes which are developed autonomously by training providers in post-compulsory education. In Germany, the skills and knowledge which should have been developed at the end of the two or three and a half years of dual apprenticeship are defined in the training ordinance. They provide an orientation for the planning of training and education actions as well as for assessment, but they are not formulated as performance standards as in Ireland and the UK-Scotland. Learning outcomes in core curricula in Poland, which are named *kwalfikacja* and integrate skills, knowledge and attitudes, have a similar function and character as in Germany, mainly providing the basis for developing school curricula.

Finally, learning outcomes are found in some curricula at the level of units, where they express the specific outcomes/objectives of single teaching units and precisely determine the contents of training and education programmes. At this level, the case studies in logistics demonstrate that all countries under scrutiny have introduced some kinds of outcome-oriented statements (i.e. *what learner should know, understand and be able to do*), but that these may be very different (see Table 2).

Table 2. Excerpts of curricula in logistics showing learning outcomes at the level of teaching units

France	Ireland	Netherlands	Spain
<i>Baccalauréat professionnel logistique</i>	FETAC minor award 'Warehouse skills' N12728 at level 4	<i>Logistiek teamleader</i>	<i>Organización del Transporte y la distribución COM_ 317</i>
Unit: Implementing the logistic function	Unit: Inventory planning and stock control techniques	Core task 1: Coordinates and participates in the reception and storage of goods Working activity 1.1: Coordinate the reception and storage of goods	Learning module Optimising the supply chain
<p>Students should be able to...</p> <ul style="list-style-type: none"> • receive goods • plan the reception • find the number of incoming vehicles • identify the regulated timeframe for unloading • calculate the time for unloading the vehicles • plan receptions and allocation of terminals • ... • receive the carriers • ... • participate in unloading activities • store • ... • manage and track stocks 	<p>Learners should be able to:</p> <ul style="list-style-type: none"> • critically evaluate and implement stock control systems • describe the classification of stock using the ABC Analysis • describe the classification of stock according to purpose • define and illustrate SMART Goals for stock planning • design an effective stores system that keeps track of stock • ... 	<p>Competence:</p> <ul style="list-style-type: none"> • Plan and organise <p>Components:</p> <ul style="list-style-type: none"> - Plan activities - Organise time - Assess progress <p>Performance indicator:</p> <p>'The logistics team leader plans, regulates and monitors logistics activities for the receipt and storage of goods, and ensures that goods are stored properly and according to work priorities. He does this based on realistic time estimations and the effective and efficient use of available capacities.'</p> <p>Competence:</p> <ul style="list-style-type: none"> • Decide to initiate an activity: <p>Components:</p> <ul style="list-style-type: none"> - To take decision • ... <p>Performance indicator:</p> <p>'The logistics team leader takes on logistics bottlenecks identified in the receipt and storage. He timely informs about decisions regarding adjustments in the schedule or workload to ensure continuity of work'</p> <p>Competence:</p> <ul style="list-style-type: none"> • Think and work together with others - consult and involve others • ... 	<p>Capabilities:</p> <ul style="list-style-type: none"> • C1: Define stages and to conduct operations within the logistics chain in accordance with the levels of service and quality established to track the goods. • C2: Calculate logistics costs in terms of the variables involved in the execution of the distribution service, to develop a budget of logistic service. • C3: To analyse and control the most common occurrences in the chain and logistics procedures to resolve them. <p>Assessment criteria:</p> <ul style="list-style-type: none"> • CE3.1 Explain the concept of unforeseen incidents and in providing a distribution service. • CE3.2 List the factors that could cause an impact in the logistics chain: loading and unloading, transportation and delivery of goods among others. • CE3.3 describe the most common incidents that may occur in the logistics chain and the ratios and indicators of quality of the process KPI (key indicators of the process) • ...

Learning outcomes approaches in VET curricula
A comparative analysis of nine European countries

UK-Scotland	Slovenia	Poland	Germany
Example 1: National progression award in supply chain operations	Vocational matura Logsticni Tehnik	Podstawa programowa technik logistyk and Świątkowski, Ryszard; Arciszewski, Włodzimierz; Program nauczania – technik logistyk 342	Kaufmann für Spedition und Logistikdienst- leistungen
Unit: transportation of goods	Module: logistics freight flows	Unit in the core curriculum: Basics of transport and forwarding agency	Position in general training plan (work-based learning): Sending goods and transport
<ul style="list-style-type: none"> Explain the key factors affecting the transportation of goods <p>Performance criteria:</p> <p>(a) describe the needs of internal and external customers in relation to transportation requirements</p> <p>(b) describe the role of the logistics company in meeting specified customer needs</p> <p>(c) explain the legal and regulatory requirements to provide a valid contract between appropriate organisations</p> <p>...</p> <ul style="list-style-type: none"> explain the options available to an organisation for the transportation of goods ... 	<p>Overarching aims:</p> <ul style="list-style-type: none"> identify the basic characteristics of the natural geographical and socio-geographical factors for the development of transport infrastructure use and orientate with the help of maps identify the importance of transport in Slovenia and the traffic flows ... <p>Professional competences:</p> <ul style="list-style-type: none"> knowledge of the maintenance elements of roads, railways and other infrastructure facilities of transport knowledge of planning and management of traffic flows legal sources on freight ... 	<p>Aims:</p> <ul style="list-style-type: none"> classification of transport service to plan work order for transport to install and use computer programs to support transport processes ... <p>Contents:</p> <ul style="list-style-type: none"> air transport elements or rules of road traffic to mark cargo ... 	<ul style="list-style-type: none"> compare performance of transport modes (road, rail, air, water) assess adequacy of transport modes for specific goods, taking into account norms and regulations make use of the possibility to combine different modes of transport choose a transport route following economic and geographic criteria ...
Example 2: SVQ 'Logistics operations management' at level 3, Unit LOM1 Identify the logistics requirements of a supply chain	Operational aims of the professional competence 'knowledge of the basic nature of geographical and socio-geographical characteristics'	Unit in the school curriculum: Basics of logistics	Unit in school-based training: Process import orders
<p>You will be able to:</p> <ul style="list-style-type: none"> select suitable sources of information on the supply chain that are relevant to the organisation and its customers identify the features and characteristics of the supplies flowing through the supply chain ... <p>You will know and understand: Supply chains</p> <ul style="list-style-type: none"> sources of information on the supply chain how the supply chain operates how supplies are moved through the supply chain ... 	<p>Informative aims:</p> <p>The student:</p> <ul style="list-style-type: none"> is aware of the different forms of the earth surface knows the role and importance of water transport knows the difference between weather and climate <p>Formative aims:</p> <ul style="list-style-type: none"> explains the importance of terrain in the development of transport network determines the importance of river and canal traffic, with a focus on the central European countries explains the importance of maritime transport in the world 	<p>Special aims of education (what the learner should be able to do after completion of the training programme)</p> <ul style="list-style-type: none"> the learner should indicate, explain cost of logistics, system of logistics, the role of information in logistics ... <p>Teaching/content (what the graduate should know after completion of the training programme)</p> <ul style="list-style-type: none"> definition and terms of logistics, general aim and history of logistics ... 	<p>Objectives:</p> <p>The students advise clients on procedures for the import of goods. They execute the tasks for importing goods, taking into account the tax and customs regulations. They apply for custom authorisations on behalf of the client and provide all the documents requested. They charge the order and they ascertain that it has been executed accordingly. When working on documents and in corresponding, students make use of the English language.</p>

Source: Cedefop.

At first sight, the variety of names used to designate intended learning outcomes at training unit level in curricula is striking: some are named learning outcomes, some are named aims, objectives, capacities, assessment standards or competences. However, the names are not a reliable indicator for a classification into different types of learning outcomes. From the examples taken from logistics (see Table 2), certain differences exist between the countries ⁽¹⁴⁾.

In some countries, outcomes statements on the level of training units refer directly to the professional context (Germany, Ireland, Spain, France, the Netherlands, UK-Scotland in the SVQ), whereas in others they rather refer to a body of knowledge to be assimilated by the learner (Poland, Slovenia, UK-Scotland in the National progression award).

Some countries define assessment criteria/performance criteria (for instance Spain and the UK-Scotland in the National progression award), whereas in other countries outcome statements are too vague to be used directly for assessment.

Differentiations within the category of outcome statements are operated in some countries along the divide between competence and associated knowledge. In SVQs a difference is drawn between what students should be able to do, and what they should know and understand. In other countries, associated knowledge is not formulated in terms of learning outcomes but as a list of items to be addressed in the classroom. In France and the Netherlands, a distinction is made between levels of generality (general versus final competences in France, competence and its components in the Netherlands); Slovenia goes a step further in detail provision, by introducing differentiation between the informative and formative operational aims of each professional competence. The formative aims are very detailed to provide a basis for assessment, whereas the informative aims represent overarching goals of the unit, such as contextual knowledge and awareness of the learned topics.

Learning outcomes are clustered in units reflecting either work process or traditional disciplines. In France, curriculum delivery is organised in disciplines (e.g. economics and law, applied mathematics, logistics), although learning outcomes within the vocational discipline reflect core functions and tasks of the occupation and so highlight the link between curriculum content and professional practice. In Germany, the reform of 1996 introducing the concept of action competence (*Handlungskompetenz*) in the school-based curricula of the dual system has also introduced a new structure of curricula for the school-based part of apprenticeships. Instead of disciplines, training units are now organised in

⁽¹⁴⁾ These differences are only verified in the case of IVET curricula in logistics. The situation might be different in other sectors and in other parts of the VET system.

'learning areas' (*Lernfelder*) reflecting the work process (see Table 3). The aim of this approach is primarily to foster the integration of practical and theoretical skills and knowledge by aiding cooperation between vocational schools and training companies ⁽¹⁵⁾. In Spain and Poland, the introduction of outcome-oriented approaches has also led to a shift from subject-based to work-process-oriented training organisation. However, the example of France, where the curriculum remains structured by subjects, shows that this is not a trend in all countries (see Table 4).

Table 3. **Comparison of the old and the new curriculum in logistics in Germany**

Germany: former curriculum <i>Fachkraft für Lagerwirtschaft</i> (1991)	Germany: new curriculum <i>Fachkraft für Lagerlogistik</i> (2004)
Basics of work and social law (70 h)	Receive and check goods (80 h)
Basics of business administration (20 h)	Store goods (100 h)
Basics of business law (50 h)	Handle goods (60 h)
Basics of transactions (20 h)	Transport goods within the company (40 h)
Procurement and reception of goods (60 h)	Make a production order of goods (80 h)
Storing (100 h)	Pack up goods (80 h)
Commissioning (40 h)	Plan tours (40 h)
Packing (60 h)	Load goods (80 h)
Sending (80 h)	Send goods (80 h)
Transport geography (20 h)	Optimise logistic processes (80 h)
Applied mathematics (160 h)	Supply goods (40 h)
Basics of book-keeping (80 h)	Calculate and analyse operating figures (80 h)
Data processing (80 h)	

Source: Cedefop.

Summarising the findings on the function and operation of the different categories of learning outcomes in logistics curricula in IVET, it seems that two approaches to using learning outcomes in curricula can be distinguished. A first approach (regulative approach) uses learning outcomes to define assessment standards which determine precisely the content of learning programmes. A second uses learning outcomes to define the didactical-pedagogical principles orienting teaching and training practices (didactic approach). As in the UK-Scotland, these approaches are not mutually exclusive, but the existence of

⁽¹⁵⁾ In some federal states, learning areas have been clustered again into broader units, for instance in Bavaria (procurement logistics, warehousing logistics, transport and distribution, and operational processes). The learning objectives and contents of each learning area remain the same as in the national curriculum.

learning outcomes at different levels within the curriculum raises the question of consistency among the levels. How do overarching goals/transversal skills, qualification standards and learning outcomes as single training units relate to each other?

Table 4. **Examples of training units in logistics curricula**

France: <i>Baccalauréat professionnel logistique</i>	Poland: <i>Technik logistyki</i> (school curriculum developed on the basis of the national core curriculum)	Spain: <i>Organización del Transporte y la distribución</i>
Organisation and management of logistic activities: - logistics (416 h) - business management (156 h) - mechanic handling of goods (52 h) - economy and law (104 h) Applied mathematics (104 h) Foreign language (English) (156 h) French (208 h) History and geography (104 h) Applied arts (104 h) Sports (156 h)	Basics of logistics Stock and inventory management Economy of logistics Transport and forwarding agency Logistics planning Logistic systems Electronic economy Training workshop for logistics and freight forwarding Training workshop for inventory management English for logistics Foreign language for logistics Practical training	Distributor capillary (90 h) Transportation long distance (120 h) Optimising the logistics chain (120 h) English training for international transport and logistics (90 h)

Source: Cedefop.

This question must be examined in relation to the definition given to curriculum in each country and with the curriculum development methods used. Relevant findings on what are the main components of a curriculum and how they relate to each other in different countries are presented in the following section.

3.2. Flexibility mechanisms and input/outcome balance

3.2.1. Shifting focus in curriculum and learning programmes content

The debates among theorists about the definition of curriculum are mirrored in the results of empirical research, which reveal that each country has its own understanding and use of the term. Reforms are under way in all countries and they include the introduction of learning outcomes as an important element (see

3.1.1). Despite this converging trend, it seems that it could be too simple to characterise these reforms only as a shift from input- to outcome-focused curricula. First, there is no pure type of input- or outcome-curriculum defined in theory and it is possible to say, on the basis of empirical research conducted in nine countries, that curricula are always mixed and that the kinds of outcomes they define varies hugely among the countries, so that even two outcome-oriented curricula look very different. Second, the use of learning outcomes is a means rather than an end in itself: the background to curriculum reforms differs between the countries, and so do the functions ascribed to learning outcomes in curricula.

A comparison of elements included in IVET curricula in logistics shows that learning outcomes may have a more or less prominent role in defining inputs (contents, teaching and learning methods, timetables: see Table 5). In countries such as France, learning outcomes are tightly linked to content specifications, and curricula contain many binding rules on learning arrangements. This can be traced back to the main motivation for introducing learning outcomes (*compétences*) in curricula: to bring the mainly school-based VET system closer to employment requirements by illustrating the relationship between professional activities and the knowledge and skills developed in classroom. On the other side of the spectrum, curricula in the further education sector in Ireland and in the Netherlands are based solely on learning outcomes. In these cases, learning outcomes are used as the main reference point and training providers have the autonomy to define contents and methods of the teaching and learning process in the programme.

Most countries, having defined learning outcomes at different levels of the curriculum, use a system of 'matryoshka dolls' describing outcomes from the most general to the most detailed. This applies in Spain, France, Poland and Slovenia though it is not the case for key competences (see Section 3.1.2). Content specifications are explicitly linked to learning outcomes, for instance through a correspondence table. In the German dual system, the outcome-orientation is seen primarily as a means of linking work-based and school-based learning and such a correspondence table is used in curriculum development to ensure consistency between the school-based and the work-based curricula.

The following table illustrates how diverse and broad the components of logistics curricula are in the countries examined in this study:

Table 5. Elements defined in logistics curricula in IVET (case studies)

Elements of a curriculum	DE	IE ⁽¹⁶⁾	ES	FR	NL	PL	SI	UK ⁽¹⁷⁾
'Vision' of the learner/overarching goals of VET	x		x				x	x
Key competences		x		x			x	x
Occupational standards or professional profile	x	x	x	x	x		x	x
Qualification standards (competences expected at the end of the programme)	x	x	x	x	x	x	x	x
Outcomes/objectives at the level of training units	x	x	x	x	x	x	x	x
Assessment criteria		x	x	x	x		x	x
Content specifications	x		x	x	x	x	x	
Textbooks						x	x	
Learning arrangements (*prescribed or **proposed)				x*				x**
Learning place	x		x	x	x	x	x	
Guiding principles on teaching and learning methods	x	x						x
Assessment methods	x	x		x			x	
Timetable (duration for each subject/module)	x		x	x		x	x	
Progression (distribution of subjects/units over time)	x		x	x			x	
Distinction between compulsory and optional modules/units		x	x				x	x
School curriculum or learning programme to be approved/accredited by public authorities		x				x		x
Percentage of the curriculum to be defined locally			35-45% regionally, up to 10% at school level		20%	5%	20%	

Source: Cedefop.

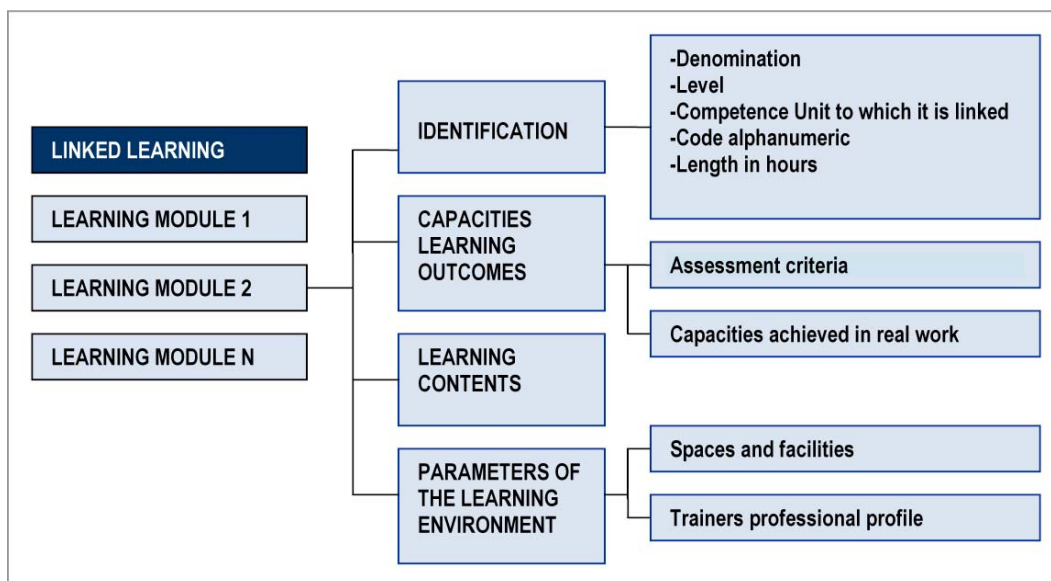
The logistics curriculum in Spain can be taken as an example for illustrating the link between the different input and outcome elements of the curriculum (see Figure 5 and Table 6). Curricula in Spain are based on competence units describing professional performance at the workplace. Learning modules are related to each competence unit and take a standardised form. Intended learning

⁽¹⁶⁾ FETAC award (further education sector). Curricula in prevocational training are very different in various aspects from those in further education.

⁽¹⁷⁾ Scotland, National progression award and Curriculum for excellence. Curricula for Scottish vocational qualifications (SVQs) and curricula in other regions of the UK are different.

outcomes are expressed as capacities in a work context and as their related assessment criteria. The learning content leading to the achievement of those capacities is also indicated. In addition, some specifications regarding the 'parameters of the learning context' are given, such as space in workshops and facilities, profile of instructors and others. Training providers are allowed to define the length of the learning module according to the nature of the learners' needs, the learning modality, the number of students and other objective criteria (INCUAL, 2009). Figure 5 displays the structure of a learning module:

Figure 5. Learning module structure in Spain



Source: INCUAL 2009, p. 8.

The following excerpt gives an example of the learning module 3, Optimising the supply chain (code MF1005_3, level 3, duration 120 h), associated with the competence unit Collaborate on the optimisation of the logistics chain to the criteria set by the organisation of the Spanish qualification *Organización del Transporte y la distribución*.

We have seen in Table 5 how many parameters of learning processes can be regulated through the curriculum in the countries examined. This reflects current academic debates in these countries on the changing understanding of curriculum in the wake of reforms over recent decades. The definition of curriculum tends to become broader, to indicate the flexibility needed in promoting a learner-centred approach, and to highlight the political dimension of curricula (Demeuse et al., 2006).

Table 6. **Excerpt of the learning module belonging to the curriculum**
Organización del transporte y la distribución

Capabilities/Learning outcomes	Assessment criteria
C1: To define stages and to conduct operations within the logistics chain in accordance with the levels of service and quality established to track the goods.	CE1.1 describe the basic characteristics of the supply chain by identifying the activities, phases and actors involved (suppliers, production centres, primary transportation, transit areas, depots, warehouses, shopping centres and distribution, transport operators, retail outlets, client) and relations between them.
C3: To analyse and control the most common occurrences in the chain and logistics procedures to resolve them.	CE3.1 Explain the concept of unforeseen incidents in providing a distribution service. CE3.2 List the factors that could cause an impact in the logistics chain: loading and unloading, transportation and delivery of goods among others. CE3.3 Describe the most common incidents that may occur in the logistics chain and the ratios and indicators of quality of the process KPI (key performance indicators of the process): - delivery time: % of deliveries on time. - deliveries are: % of complete surrender. - quality in issue: % orders incidences. - download time: % downloaded orders on time.
Capacities whose acquisition should be completed within a real working environment Other skills:	C3 and C4, for all its CE Demonstrate a good professional practice. Demonstrate a degree of autonomy in the resolution of contingencies related to its business. Demonstrate interest and concern for successfully addressing customer needs. Communicate effectively with the right people at all times, respecting the channels in the organisation. Respect the procedures and internal regulations of the company.
Contents	1. Integrated logistics in the company The logistics role in the company. Total quality and just in time. Managing the logistics chain in the company. Analysis of the logistics or supply chain of company: definition and stages of the chain. Analysis of logistics costs: direct and indirect costs of the chain. Cost control in the chain logistics. 2. Reverse logistics Treatment of returns. Costs assigned to any refund. Information systems. Assessment of the causes. Reuse of units and equipment load. Pools of pallets. Containers and reusable packaging. 3. Customer service Elements of customer service. Continuous improvement of processes. Optimising cost and service. Establishment of management indicators (KPIs). Measuring and monitoring of customer satisfaction. Incident management system. Quality management and customer service. 4. Application of information and communication systems in logistics Technologies and information systems in logistics. Communication systems applied to operations logistics EDI, CRM, Web services and e-mail. Implementation of information systems and monitoring of operations.
Basic requirements of the formative context Spaces and facilities: Professional profile of the trainer:	Classroom management of 45 m ² 1. Mastery of the knowledge and skills related to collaboration in the optimisation of logistics chain with the criteria set by the organisation, which is shown by one of the ways: education in engineering, diploma, technical architect or other higher level related to this field. Professional experience of at least 3 years in the field of competences related to this training module 2. Pedagogical competence accredited by competent authorities.

Source: Cualificación Profesional: Organización del Transporte y la distribución. *State Official Bulletin*, Spain, 21 February 2008.

A good example is provided by the report of the curriculum review group to the Scottish Executive in November 2004:

'The curriculum includes all of the experiences which are planned for children and young people through their education, wherever they are being educated. [...]. The curriculum reflects what we value as a nation and what we seek for our young people. It is designed to convey knowledge which is considered to be important and to promote the development of values, understanding and capabilities. It is concerned both with what is to be learned and how it is taught. It should enable all of the young people of the UK-Scotland to flourish as individuals, reach high levels of achievement, and make valuable contributions to society. The curriculum affects us all.' (Scottish Executive, 2004, p. 9).

Referring to recent developments in Europe, Braslavsky (2001) notes that our understanding of the concept of curriculum has been changing. According to her, curricula were traditionally no more than plans or programmes prescribing the disciplines to be taught, the content of courses and the duration of teaching, plus, in certain cases, evaluation methods, materials and activities. They were 'rigid' in making strict prescriptions, and 'poor' in that they applied only to a small number of the parameters shaping education and training processes. Looking at European and international reforms in recent decades, Braslavsky identifies two trends to make curricula more 'flexible' and to 'enrich' them. Flexibility is meant to give schools and teachers more autonomy and support pedagogic creativity, better to meet the needs of the learners. By 'enrichment', the author means a process by which new parameters of training and education processes are addressed by curricula. Rich and flexible curricula help schools to make decisions on a broad range of issues, by providing, for instance, minimum standards, criteria, guiding principles and examples.

Among the VET curricula analysed in this study, the Scottish Curriculum for excellence and the new Irish curriculum in prevocational training (Leaving certificate applied programmes) embody best the trends towards flexibility and 'enrichment' identified by Braslavsky. These documents, which mainly define learning outcomes, leave providers and teachers broad autonomy to define the content, the progression and the teaching and learning methods to reach the defined outcomes. These elements are thus defined in learning programmes (or study programmes) developed by the providers. To support the design of learning programmes, the curriculum defines didactical principles and explains the pedagogical approach which should underpin the programme. A large amount of guiding material, produced nationally or locally, is also available to practitioners.

The Scottish Curriculum for excellence defines the principles which should guide teachers and training providers in developing learning programmes:

‘It is the responsibility of schools and their partners to bring the experiences and outcomes together and apply these entitlements to produce programmes for learning across a broad curriculum, covering science, languages, mathematics, social studies (including Scottish history), expressive arts, health and wellbeing, religious and moral education and technology. Throughout this broad curriculum it is expected there will be an emphasis on Scottish contexts, Scottish cultures and Scotland’s history and place in the world. This planning should demonstrate the principles for curriculum design: challenge and enjoyment; breadth; progression; depth; personalisation and choice; coherence; relevance. Learning should be made available in a range of ways including interdisciplinary learning and a range of opportunities which ensure a broad approach.’ (Scottish Government, 2008, p. 8).

Table 7. **Excerpt of the curriculum for the Leaving certificate applied graphics and construction studies (excerpt of module 2)**

Purpose of the module	‘This module is designed to provide students with an insight into a variety of construction processes – thereby developing knowledge and skills that will contribute to the students’ overall development, their preparation for further education or training and adult working life.’	
Aims of the module	<ul style="list-style-type: none"> - develop an understanding of health and safety relating to construction work - introduce the students to the possibility of a career in the construction industry - develop basic skills in the use of tools and equipment - develop an awareness of planning control and its importance to the environment - enable students to adopt a systematic approach to design. 	
Unit 1	Planning and the built environment	
	Learning outcomes	Teacher’s guidelines
	<p>The student will be able to:</p> <ol style="list-style-type: none"> 1. explain why planning control is necessary 2. list the various types of planning permission 3. identify the documents required for planning permission 4. complete a planning application form 5. demonstrate awareness of the impact of buildings on the environment. 	<ol style="list-style-type: none"> 1. The topic and importance of planning control and its relationship with harmony in the built environment can be explored through: <ul style="list-style-type: none"> - a variety of visual material, - visits by experts from outside the school. 2. Study the necessary documents required for full planning permission. 3 and 4. The students should be given hands-on experience filling out application forms, inserting titles and labelling drawings. 5. Examples of both new and old buildings should be examined with the intention of getting students to form opinions on the positive and negative impact of these buildings on the environment.
Resources	Textbooks and videos	
Key assignments	<ul style="list-style-type: none"> - As part of a group I visited a site and observed excavation in progress - As part of a group I examined the structure of a timber upper floor - I measured a room and drew its plan to a given scale - I joined two pieces of skirting board using a scribed joint. 	

Source: Department of Education and Science of the Irish Republic, National Council ..., (2000). Available from Internet: http://lca.slss.ie/resources/c/77/1/Graphics_Construction.pdf [cited 19.4.2010].

The curriculum of the Leaving certificate applied in Ireland (Table 7) provides a good example of a 'rich' and outcome-oriented curriculum, especially when compared to the curriculum of the Leaving certificate established (Table 8) ⁽¹⁸⁾.

Teacher's guidelines are not prescriptive: they only provide suggestions on activities. However, it is stated in the curriculum document that *it is essential that the fundamental principles of the Leaving certificate applied be upheld. Teachers are therefore required to adopt a methodology that is student centred, activity based and affirming* ⁽¹⁹⁾.

Table 8. **Excerpt of the construction studies syllabus for the leaving certificate, ordinary and higher level course**

Aims	<p>The courses have been designed so as to:</p> <ul style="list-style-type: none"> - introduce pupils to the knowledge and skills involved in construction technology and construction materials and practices; through theoretical study and integrated projects; - develop the pupils' ability to communicate ideas and information by appropriate methods, and encourage them to apply accurate observation and scientific investigation through the exploration of materials and processes; - contribute towards their general education; - provide a basis for those who may wish to study construction technology at third level. <p>[...]</p>
Form of examination	<ul style="list-style-type: none"> - a written-paper, including a compulsory drawing question - a practical test - an assessment of workshop/laboratory work and projects.
Syllabus	<p>Part 1: Construction theory and drawings '[...] Historical development of buildings. Simple aesthetic principles related to the appearance of buildings. Elements of the built environment [...]'</p> <p>Part 2: Practical skills '[...] The need for maintenance and for care in the use of tools. Common woodworking tools and their uses, construction and mechanical principles: Grinding, sharpening and general maintenance of workshop equipment. Safety precautions associated with edged tools and electricity [...].'</p> <p>Part 3: Course work and projects '[...] As part of their study of the subject, pupils are required to carry out the following two main types of workshop/laboratory works:</p> <ul style="list-style-type: none"> - experiments which are assigned and closely supervised by the teacher, and - projects in which the pupils are given a degree of freedom in carrying out their tasks [...]'
Suggested experiments	
Textbooks	Suggestions for textbooks and reference books, which are not compulsory.

Source: Department of Education and Science of the Irish Republic (2007). Available from Internet: http://www.education.ie/servlet/blobServlet/lc_construction_studies.pdf?language=EN [cited 19.4.2010].

⁽¹⁸⁾ The curriculum of the LCE is currently being revised, but the excerpt presented has not yet been reviewed.

⁽¹⁹⁾ NCCA (2001). *Programme statement and outline of student task, Leaving certificate applied.*

Germany also adopted a new form of curriculum for the school-based part of apprenticeship in 1996, which follows the trend of 'enrichment'. In an introductory part, the philosophy of the new curriculum is explained and the consequences of the concept of 'vocational competence' are presented regarding teaching and learning practices (see Section 3.4.1). Before the reform, the introductory part of the curriculum documents was much shorter and less systematic, limiting its scope to describing the general aims of the qualification without providing any information on the understanding of competence and the implications for learning programmes and teaching practices.

Other countries, such as France, also display elements of 'rich' curricula, as in suggestions on teaching methods and learning environments, but huge differences still exist concerning the scope or 'density' of curricula, as shown by the comparison of the structure of Spanish learning modules and Scottish or Irish curricula.

3.2.2. Learning outcomes and modularisation as elements of flexibility in the curriculum: modularisation

One function of learning outcomes is to grant more flexibility and autonomy to training providers in defining learning programmes within the framework of a 'rich' curriculum (see 3.3.3), creating favourable conditions for developing learner-centred approaches. Another important measure to make the VET system more learner-centred is modularisation of curricula, which has been accompanying the introduction of learning outcomes in VET in several countries.

Modularisation of curricula and qualifications is a powerful instrument for making VET systems more demand-driven, contributing especially to:

- (a) mobility and permeability (nationally and internationally);
- (b) transition between different educational tracks and places of learning;
- (c) lifelong learning.

Modularisation describes the composition and progression of curricula. The learning experiences defined in the curriculum are divided into outcome-based units organising teaching, learning and assessment activities. Units are validated separately, increasing the opportunity to combine them according to the learner's needs and interests. Modularisation can be used to grant learners more autonomy to build their own learning pathways, combining training units and adapting the workload to their needs.

There are very different concepts and models of modularisation (Raffe, 1994; Gonon and Sgier, 1999; Pitz, 1999; Deißinger, 2004; Ertl and Sloane, 2003). Such models can be related to the understanding of competence underpinning

the curriculum, which explains why debates on modularisation and learning outcomes approaches in curricula are so closely related.

In the extreme form of modularisation, students can combine modules following their own choices and define their own 'skills portfolio'. Single modules have a currency on the labour market. This form of modularisation is associated with a narrow concept of competence, in which skills and knowledge oriented primarily around performance at the workplace can be accumulated over time. The division of the curriculum into elements to be combined following the learner's choices does not pay attention to the integrative, multidimensional character of competence as it is understood in the holistic approach. Such a model is to be found in further education in Ireland and the UK, where single modules have a currency on the labour market. In the SVQ/NVQ model, qualifications are composed of a set of modules assessed separately, which can be combined into several profiles (see in Annex 1 an example of the modular structure of the SVQ logistics operations management level 3). The SVQ logistics operations management level 3, for instance, is built on three compulsory units and five optional units to be chosen from a list of 15.

The moderate model (for example in the Netherlands, see Figure 6) is characterised by a final exam on several units, as well as on assessment and certification of each single unit, on the ground that the whole is more than the sum of its parts. The aim of this model is to provide a holistic and integrative approach to competence, while making the system more flexible in terms of place and duration of learning, as well as for learners to develop a particular profile. Special efforts have been made in the Netherlands to coordinate the contents of the units and develop continuous pathways to ease vertical progression (Onstenk, 2008). The Adult Education and Vocational Education and Training Act (WEB) introduced a four-level qualification framework in upper secondary VET with qualifications divided into units or partial qualifications. Partial qualifications are certified separately, but it is only after having obtained all certificates that a full diploma is awarded. Certificates are not meant to have currency on the labour market, although they sometimes do. In this system, learners can switch easily from one VET course to another or at another level, and partial qualifications are still valid when people return to VET after having left education for some years. These units or partial qualifications are meant as 'building stones' promoting lifelong learning (Hövels, 2004).

The alternative model to modularisation is typically 'vocationalism' found, for instance, in the dual system of VET in Germany (*Berufsprinzip*). This model does not allow separate certification and validation of training units, competence being defined as the result of the whole process of learning in a company and at school

using an integrated curriculum. According to the German vocational training act, the object of initial training is to provide a broadly conceived basic preparation for an occupation and the necessary technical abilities and knowledge to engage in a skilled occupation. *Ausbildungsberufe* (apprenticeships) involve sets of typical activities around the workplace which are not specific to a single job or company, to guarantee sufficient learners mobility and flexibility in the labour market. Also, certificates attesting the successful completion of vocational training fulfil an important information and orientation function for and on the labour market. They make the labour market transparent both for young people seeking traineeship and employers seeking skilled employees. Therefore the *Berufsprinzip* is still defended today by German employers' associations and trade unions alike as a model for regulating training contents and qualification levels. However, although modularisation (understood as involving partial qualifications) is discussed sceptically in IVET, modular approaches are becoming increasingly influential in German VET (Kuratorium der deutschen Wirtschaft, 2006; Euler and Severing, 2007). Modular approaches have been tested in several pilot projects (Pilz, 1999; Gonon and Sgier, 1999) and some forms of modularised curricula are already established in prevocational education and training (*Qualifizierungsbausteine*) as well as in a system of additional qualifications for further training after completion of the dual system apprenticeship (*Zusatzqualifikationen*) (Frommberger, 2009). Whereas additional qualifications build on knowledge and skills developed in traditional qualifications, *Qualifizierungsbausteine* in prevocational education are recognised as parts of traditional qualifications obtained in the dual system.

In France, as in Germany, the principle of vocationalism (*métier*) has prevented to date the modularisation of upper-secondary IVET. The introduction of competence-based standards, starting with the *Baccalauréat professionnel* in 1985, provided the basis for validating informal and non-formal learning over a longer period of time, but a full qualification is delivered only on completion of all certification units and, in IVET, learners validate all training units at once in a final examination. The curriculum is structured in units following traditional disciplines rather than occupational functions and tasks, and the opportunity for learners to influence their curriculum by choosing optional units is very limited (see Figure 15).

In Ireland, prevocational and vocational education subsystems are modularised to allow maximum flexibility for learners to determine their individual learning programme. At prevocational level, the Leaving certificate applied programme (LCA) is delivered in modules. To obtain a LCA, a student must complete 44 modules, of which eight are of 'vocational specialism'. Subjects of general education, which normally have a volume of 180 hours, are divided into

two to four units. In addition, students are offered short units (90 hours) and transition units (45 hours). In some subjects, units are divided into core and optional units to allow greater flexibility at school- or class level. To increase flexibility further, a network of schools is piloting 'flexible learning profiles'. These profiles incorporate elements of a number of the existing programmes available at senior cycle, plus some other modules available from other awarding bodies. In this scenario, learners might combine senior cycle subjects, short courses, transition units, Leaving certificate applied modules, work-based learning and FETAC courses as part of their senior cycle education. In further education, qualifications are also modularised. Major awards are composed of a definite set of modules, but candidates may also validate single modules and be granted a component certificate for each module.

In Spain, VET curricula are modularised to meet the requirements of modularised qualifications. Typically, VET curricula include three kinds of modules:

- (a) specific modules associated with a unit of competence, and also referring to the level of the competence unit;
- (b) cross-curricular modules building up transversal skills, which are essential for professional competence:
 - (i) modules relating to the working environment,
 - (ii) modules for vocational training and guidance;
- (c) a workplace module, which takes place in companies or as on-the-job vocational training.

These modules are validated separately, offering learners the possibility to accumulate them in different places, to interrupt their studies, or to change pathways and have these modules recognised for another qualification. The award of a full qualification is dependent on the completion of the national minimum curriculum, to which regions and schools may add a local or regional curriculum.

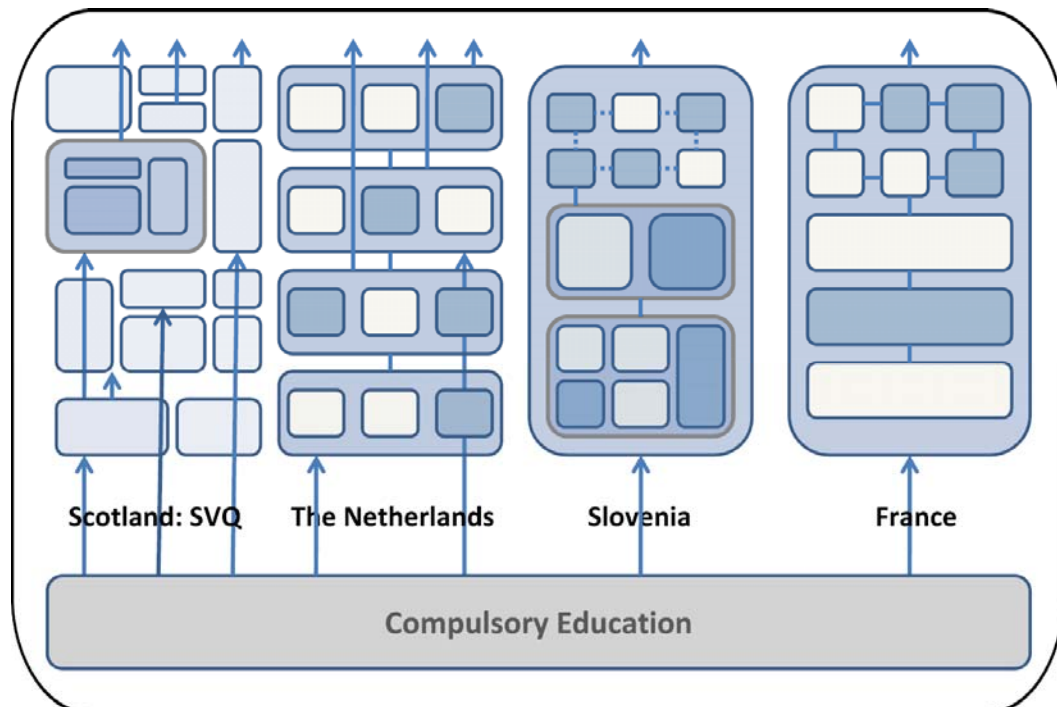
In Poland, the curricula of 185 professions are modularised. Traditional and the modularised curricula exist in parallel, but modular curricula are becoming more important, although vocational schools have reported problems with their implementation. It seems especially difficult to combine general subjects and vocational modules in one timetable, because of different training durations and schedules for examinations.

In Slovenia, modularisation was discussed at length because of the traditional orientation of VET around the principle of vocation. One perceived advantage of modularisation is that it strengthens the link between theory and practice by changing the curriculum from a subject-based to a competence-

based curriculum. Finally, Slovenia chose to develop a modularised curriculum, but without abolishing the principle of vocation. To ensure this, wide generic modules were designed which are applicable to various programmes and fields; student choice of qualification composition was regulated and the final exam was retained to ensure coherence. However, this modular concept provides more flexibility and individualisation and links different training paths. A module represents a programme unit of contents and objectives clustering professional, theoretical, practical and general knowledge. The completion of individual or several units leads to the acquisition of a vocational qualification (Pevec Grm, 2007). There are different kinds of modules in the programmes:

- (a) (common) basic modules which cover basic professional and theoretical knowledge and generic competences in a specific vocational field (e.g. transport means, logistics freight flows); for the qualification *logisticni tehnik* seven vocational modules are determined; five of them are obligatory;
- (b) mandatory elective modules with regulated choice based on elective criteria; for the qualification *logisticni tehnik*, two mandatory elective modules must be validated from a list of four;

Figure 6. **Models of modularisation in vocational education and training**



Source: Cedefop.

- (c) elective modules which are offered by schools in the open curriculum; they can include other qualifications from a different vocational programme or even field.

The modular structure of the curriculum has contributed to improved links between initial and continuing education and training, increasing vertical and horizontal mobility between programmes. The qualification *logisticni tehnik* is connected by several shared modules to qualifications in CVET: logistics agent, freight forwarder, and warehouse logistics and operations manager. Some shared modules are common to all: trade flows, technology communications, entrepreneurship and economic management, transport means and logistics freight flows. Other modules are common only to *logisticni tehnik* and one of the CVET qualifications. Students who have difficulties in completing programmes can receive a certificate of national occupational qualification. Informally acquired competences can be acknowledged in further education and there are efforts made to connect the school and certificate system (CPI, 2008).

It appears that different forms of modularisation in logistics have been introduced in parallel to the shift to more outcome-oriented curricula in several countries. This trend to modularisation gives more flexibility to learners, who can combine training units and thus shape their own study programme. Some countries, however, stick to the principle of vocation (*Berufsprinzip* in Germany, *métier* in France), seeking other forms of flexibility at the margins of the system, for instance, through prevocational and continuing education and training. In all the cases examined in this study, learning outcomes have played a crucial role in developing modules, providing the necessary basis for modularisation to permit increasing mobility and permeability (nationally and internationally), promoting transition between different educational tracks and places of learning, and aiding lifelong learning.

3.3. Methods and actors in curriculum development

Shifting to an outcome-oriented approach by defining learning outcomes in new curricula is expected to change curriculum development, the methods used and the actors involved. The following sections explore the extent to which this emphasis on outcomes of learning has implications for how, and by whom, curricula are being developed.

3.3.1. Methods used in curriculum development

The final adopted curriculum is a product of negotiation between different actors in education and training and in the labour market, and the use of scientific and pedagogic methodologies and theory-based instruments. While consultation and decision processes are usually institutionalised, the choice of a particular method and the use of particular instruments are not determined by law in any of the countries examined in the study. On the contrary, in most countries a case-by-case approach is adopted and methods are continuously refined or adapted, especially in countries where universities or other research institutes are involved in curriculum development. However, the introduction of learning outcomes in curricula and the shift to competence-based education have required the adoption of new tools and methodologies to define learning outcomes and to determine the progression in curricula and learning programmes. The present research provides interesting examples of such methodologies and instruments in use, although they cannot be considered as being representative for a whole country or often even for a qualification type or education and training subsystem.

In VET, where outcome-oriented approaches have primarily been introduced to strengthen the link between the curriculum and work requirements, three curriculum development phases can be identified in every country examined in this study. A first phase is dedicated to analysing work requirements and a second to developing the curriculum based on these requirements (Bauer, 2008). A third phase is dedicated to developing a learning programme which, according to the definition used in this study, is based on the curriculum and includes the planning decisions taken locally to meet the needs of particular learners in a determined place and time.

The first phase of curriculum development, dedicated to the analysis of work requirements and skill needs, can use different methods. In many, the involvement of experts from different backgrounds (especially employers and employees) in the work analysis is an essential element of the methodological design. From their personal experience and knowledge of a sector or an occupation, they provide inputs into the development process or give feedback on the results.

In Ireland and Spain, functional analysis is reported to be often used in identifying work requirements. The starting point for determining the work requirements and training needs are study and analysis of the system of production and the labour market. Occupations are divided into tasks and duties, to determine skills and knowledge requirements independently of a specific workplace. These requirements are clustered and transformed into learning outcomes with associated performance criteria. Spanish qualification standards

are revised at least every five years using this method to ensure that they are still relevant to the labour market (INCUAL, 2009).

In France the work analysis method ETED (*emplois types étudiés dans leur dynamique*) is used to design completely new professional profiles, where it is not possible simply to update or merge existing standards. This sociological work analysis method analyses jobs and the relationship between different jobs in a 'job family' to take into account the developments of occupational practices when drafting occupational standards. This method also pays particular attention to the relationship between individual competences and the organisational context and infrastructure allowing the individual to perform its activities (Liaroutzos and Sulzer, 2006). Consequently, qualification standards always contain information on the organisational context in which the occupation is usually performed, on the tools/equipment and relationships with others as well as on the career perspectives and related occupations. But, since the 1990s, the use of work analysis approaches has been decreasing in favour of cognitive and professional didactic approaches (Bouder and Kirsch, interview 16 April 2009). Professional didactic proposes an integrative and systemic model for studying the development of professional competence and training by *integrating the theory of activity (with the model of twofold regulation) and the main didactical concepts (knowledge of reference, conceptualisation and schemes of action, didactical transposition of work situations)* of situated cognition and cognitivism in the psychology of learning (Rogalski, 2004, p. 103).

In addition to these well-known approaches, most countries use a broad set of empirical research methods to identify skill gaps and work requirements. In case of the National progression award in supply chain operations for instance, the Scottish Qualifications Authority (SQA) was first approached by the Sector Skills Council Skills for Logistics, which mainly includes employers who expressed the need for a new qualification. To generate the data needed to develop the new qualification, SQA commissioned a scoping study which had to assess the demand for such a course from candidates, training providers and employers; the content and structure of the course, and the relationship of this to existing qualifications (especially the Chartered Institute of Logistics and Transport introductory certificate in logistics); and the capacity/infrastructure to support delivery. The consultants conducted a series of interviews with representatives of the industry, public and private training providers, local authorities and branch organisations.

The results of this scoping exercise were matched with national occupational standards, which are themselves developed through functional analysis and compared to the descriptors of the Scottish qualification framework.

Empirical research is often conducted by universities, public research centres or consultancies, which adapt their research design to existing data, to the situation. Curricula are rarely developed for totally new occupations; in many cases existing curricula are evaluated and updated. In France, most studies commissioned in the first phase of curriculum development are realised by CEREQ (Centre d'Étude et de Recherche sur les Emplois et les Qualifications) and CNAM (Conservatoire National des Arts et Métiers), two publicly funded bodies specialising in qualification research and work analysis⁽²⁰⁾. In Germany, a similar role is assumed by the Federal Institute for Vocational Education and Training, BIBB, which usually cooperates with universities and other research institutes. A research field dedicated to assessing skill needs and to curriculum development is well established in many universities and different approaches have been developed (Rauner and Maclean, 2009, p. 699-869). Current approach examples are sector analysis (Spöttl, 2005a), analysis of tasks, (*Berufswissenschaftliche Aufgabenanalyse*, Röben, 2005) or workshops of experts and skilled workers (*Experten-Facharbeiter-Workshops*, Spöttl, 2005b). In Slovenia, the National Institute for Vocational Education and Training (CPI) was founded in 1995 by the government, the Chamber of Commerce and Industry and the Chamber of Craft and Small Business with the mission, among others, to carry out research and develop the occupational standards on which VET curricula are based.

In many countries, the first phase of curriculum development results in the production of occupational standards, formalising the work requirements which will serve as a basis for the second phase of the process. This is the case in Ireland, Spain, France, Romania, Slovenia and the UK-Scotland, while in Germany the translation of work requirements into curricula is directly based on primary data.

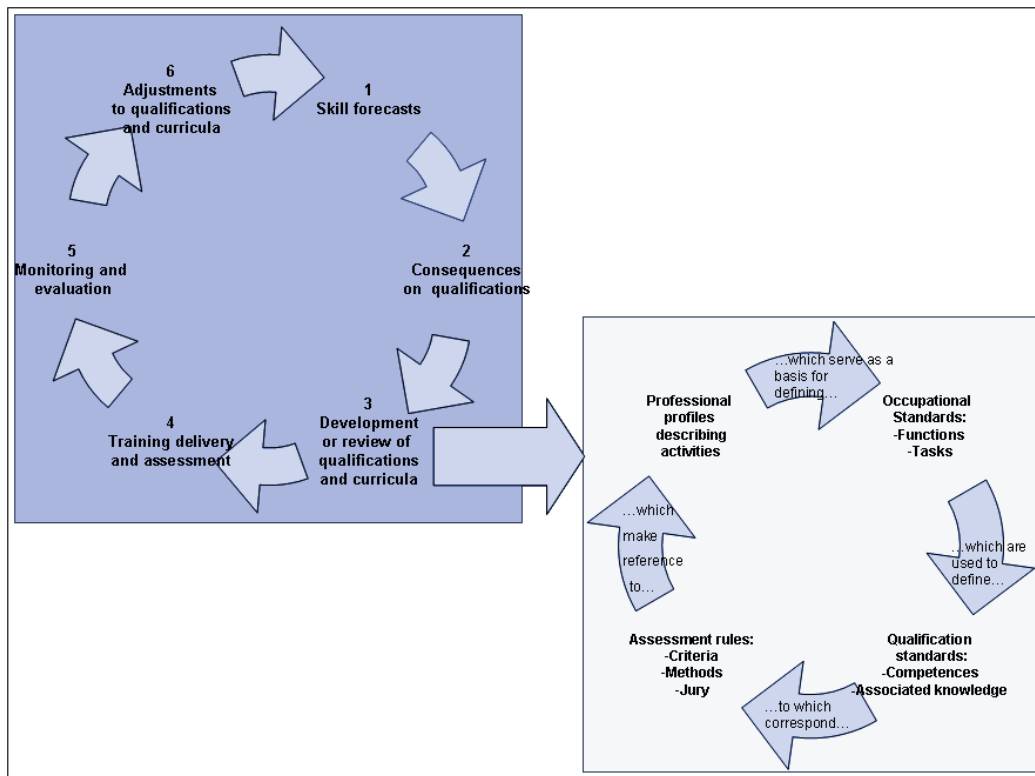
The process of curriculum development in France can be seen more or less as a representative one, being very close to the processes applied in Ireland, Spain, Romania, Slovenia and the UK-Scotland.

The first step is to define occupational standards (*référentiel des activités professionnelles*), which include core activities and expected results/products of these activities. Then, the competences necessary to perform the activities are defined, followed by identifying the associated knowledge, skills and attitudes (*savoir, savoir-faire, savoir-être*) underpinning the competences. Together with the list of competences, they form the *référentiel de certification*, which will be the main document for planning courses and for defining assessment activities. This

⁽²⁰⁾ Interview with Stéphane Balas, French Ministry of Education, 22.9.2009.

scheme is similar to the approach used in the EU project *Professionnalisation durable*, which also follows these three steps (Dufresne, 2004). The figure below illustrates this procedure.

Figure 7. **Development cycle of qualification standards in vocational subjects in France**



Source: Ministry of Education of France, 2004.

In the second phase of curriculum development, occupational standards are translated into curricula. This step requires the use of different methods dependent on the structure and content of curricula and on the country. In the countries examined, this requires the definition of intended learning outcomes and, sometimes, also assessment standards or performance indicators, content specifications, units and timetables.

The interviews conducted for this study suggest that a common issue in current debates in all countries is the degree to which intended learning outcomes should reflect occupational standards. This debate reflects different views of professionalisation and of the goals of VET, potentially based on conflicting interests among stakeholders. In CVET, very specialised qualifications closely reflecting employment requirements are widely accepted, yet in IVET qualifications are often based on a broader set of occupational standards. This is the case in Romania, although employers' representatives generally argue in

favour of more specialised qualifications. Generally, this issue is resolved by compromises between stakeholders rather than by theory-based arguments.

More 'technical' issues related to the curriculum design concern the formulation of learning outcomes and assessment criteria, and the definition of progression and timetables in the curriculum. These questions require deep knowledge of education and learning processes and, in most cases, experienced teachers and educationalists are involved. Often, instruments and official guidelines are provided to support their work, as for instance for the selection and sequencing of content and the verbalisation of learning outcomes (see the example of Ireland).

Bloom's taxonomy is often cited as a tool used in clustering learning outcomes (e.g. Ireland and Spain) but other taxonomies are used as well. In a methodology guide for curriculum development groups, the French Ministry of Education provides an example of taxonomy with four levels: information, expression, mastery of tools, and mastery of methods.

In Ireland, the Further Education and Training Awards Council has published guidelines for writing learning outcomes based on best national and international good practice criteria (FETAC, 2005, p. 20). These include the following:

- (a) learning outcomes will be concise statements, devised independent of delivery and setting, worded in clear, unambiguous language;
- (b) learning outcomes will be written in the future tense and commence with an active verb which most precisely describes the actual or preferred outcome. In general, only one verb will be used to structure each outcome, verbs will be appropriate both to the level and the strand;
- (c) they will clearly reflect the level of the award;
- (d) they will be observable and measurable. Learners must clearly know what is expected of them;
- (e) they will enable and encourage a range of assessment methodologies to be applied;
- (f) since the learner's performance should be measurable, the verb chosen for each outcome statement should be an action verb which results in overt behaviour that can be measured;
- (g) sample action verbs are: compile, create, plan, revise, analyse, design, select, utilise, apply, demonstrate, prepare, use, compute, discuss, explain, predict, assess, compare, rate, critique;
- (h) certain verbs are unclear and subject to different interpretations in terms of what actions they are specifying. Such verbs call for behaviour which cannot be easily measured. These types of verbs should be avoided e.g. know, become aware of, appreciate, learn, understand, become familiar with;

- (i) to set criteria for determining award standards, volume ranges will be established for each award-type. The volume of a named award will depend on the amount of 'notional' learner effort required to achieve the outcomes for that award. This will vary according to the level and type of award and will be calculated on the basis of notional learning effort, i.e. estimating how long it takes a learner to achieve the required standard, to include for example, assessment time, study time, lab-work.

While different theory-based methods and tools exist and are used in developing national VET curricula, in the case of specific sectors, often these are not a reliable indicator for their use in the work of curriculum development groups. The German curriculum on logistics illustrates this case well. The members of the group in charge of developing the curriculum *Fachkraft für Lagerlogistik* reported that the previous curriculum, which was to be reformed according to the new principle of vocational competence, was evaluated to identify possible changes in work requirements. From this evaluation it was decided to add new competences in the curriculum, such as working in a team, customer-focused order processing and improved foreign language skills. Beyond this evaluation, the interviewees reported that no further methods or instruments had been used, so that the curriculum could be considered as the product of negotiation between qualified persons representing different interests.

In the case of Poland, the teacher in charge of developing a school curriculum (i.e. a curriculum based on the national core curriculum and approved by the Ministry of Education, which can be used by any school interested) also reported that he had used his rich experience as teacher rather than concrete curriculum development methodologies.

3.3.2. Stakeholder involvement

Broad consultation campaigns and increased stakeholder involvement during national curriculum development may fulfil at least two different functions: it may increase the relevance of curricula for the labour market and society as a whole, and the legitimacy and acceptance of the curriculum. This is, in turn, a necessary requirement for involving stakeholders in training delivery (for instance companies in apprenticeship schemes) (Winterton, 2000). These two functions can be fulfilled independently from the form and content of curricula. This is demonstrated by the fact that stakeholder involvement was institutionalised in some countries well before a shift took place to outcome-oriented curricula. Although it is difficult to establish a causal link between the introduction of learning outcomes in curricula and the degree of stakeholder involvement, a

trend can be noted towards increasing stakeholder involvement in those countries where it had traditionally been weak.

A distinction is required between stakeholder involvement in defining a new curriculum framework and curriculum development concerning specific qualifications. In the countries examined in this study, a broad process of consultation and public debate took place when a new overarching curriculum reform was decided (Ireland, France, the UK-Scotland, and to a lesser extent also Germany). It must be noted that the intensity and the number of actors involved were highest when general education was also involved. This confirms the thesis of Braslavsky (2001) concerning the political nature of curriculum, which is increasingly understood as a 'contract' between society and the educational system. Such large national debates took place for instance in the UK-Scotland in developing the Curriculum for excellence and in Ireland for the curriculum review concerning compulsory education (including prevocational education). Debates concerning the introduction of the concept of vocational competence in IVET in Germany were highly controversial, but they did not attract as much attention in mass media as the debates on learning outcomes (*Bildungsstandards*) in general education.

Stakeholder involvement in curriculum development for specific qualifications is mostly restricted to social partners, teachers and training providers. Parents and learners may also be represented in consultative committees or on the board of national agencies (e.g. in Ireland), but in most countries their role is fairly limited at that level; involvement at school level is more common, as explained below.

In the countries under examination, the strongest degree of participation from social partners in terms of decision-making powers can be observed in the German dual system and, more generally, in those systems and programmes where companies are involved in training delivery, like the Netherlands.

In Germany, the overall process of curriculum development has not been changed with the reform introducing the concept of vocational competence in curricula. The curriculum for work-based learning is defined by a committee composed mainly of social partners at federal level, whereas the curriculum for school-based learning is developed by a committee of representatives of the *Länder*, mainly teachers. Both committees cooperate closely to ensure that both documents will be coherent. The composition of curriculum development groups is determined by law to ensure balanced representation of different interests and the 'consensus principle' states that new curricula are not adopted unless a consensus has been reached among all parties involved. The example of logistics illustrates this balance, listing all the relevant organisations in the sector

at federal level (see in Annex 1 example on stakeholder involvement for the design of the curriculum *Fachkraft für Lagerlogistik* in Germany).

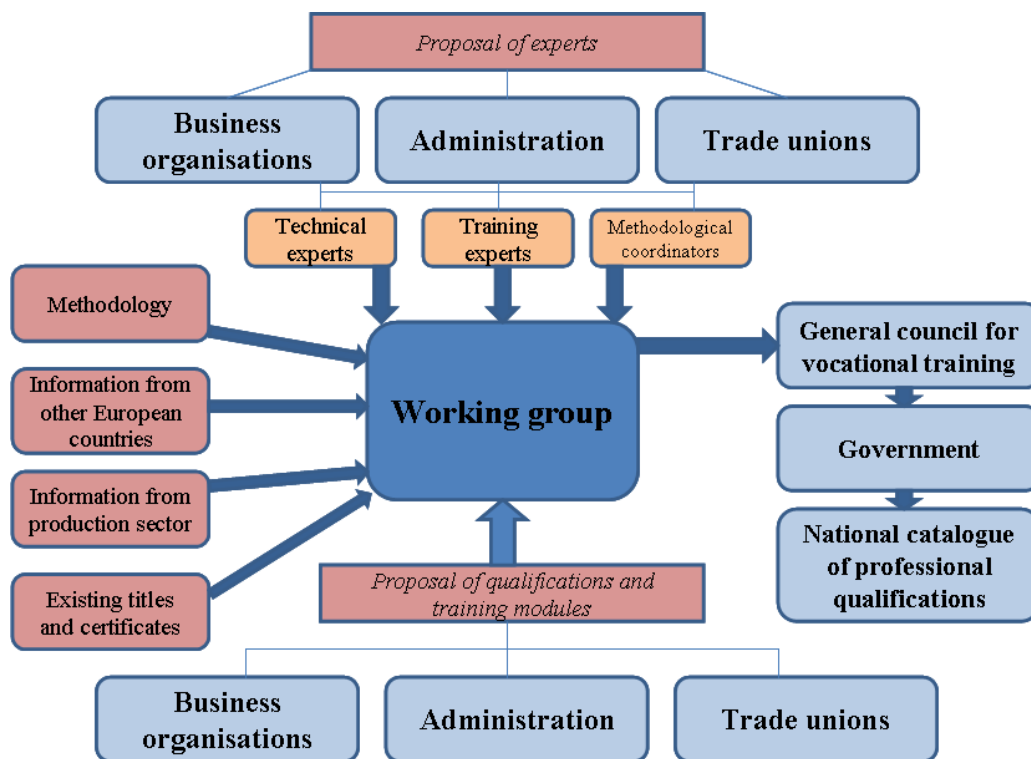
The curriculum for the school-based part of the dual system is a minimum curriculum to which the federal states can add new elements or which they can draft more precisely, although most of the states do not make use of this opportunity. In those cases where they decide to adopt a regional curriculum, different stakeholders may be invited to participate in its development. In the case of logistics, the Ministry of Education of Bavaria decided to adopt a curriculum which was developed by four teachers, a researcher from a local public research institute and a representative of Audi AG, a major employer in the region.

In the Netherlands, since the adoption of WEB in 1996, so-called expertise centres for VET (*Kenniscentrum Beroepsonderwijs Bedrijfsleven*, KBB) have been established. The 18 KBBs are formed by social partners representing a sector or a branch of the economy. In the context of the shift to a competence-based VET system, their role is to monitor skill needs in their sector and to develop national curricula. Using these outcome-based curricula, the regional training centres (*Regional Opleidingen Center*, ROC) develop learning programmes. At this stage, social partners are involved in curriculum development through a council attached to each ROC. This council is consulted to provide input on local and regional needs in developing learning programmes (Hövels, 2004). As in Germany and the Netherlands, the involvement of social partners is also organised on a tripartite basis in Spain, France and Romania.

In Romania, the process of curriculum development has been completely changed during curriculum reforms in IVET. Curriculum development in IVET is undertaken by working groups centrally coordinated by the National Centre for Technical and Vocational Education and Training Development (NCTVETD) (Cedefop and ReferNet, 2009b). These working groups are composed of representatives of the social partners and the education sector. They elaborate the qualification profile and the associated training standards, which have to be validated by the competent sector committee. These sector committees were established for systematic involvement of the social partners in design and assessment of vocational qualifications. The sector committees are based on the agreement between social partner sector representatives. At least two national representative organisations should enter this agreement: an employers' organisation and a trade union. Others such as regulating authorities, professional associations and other sector representatives may also be part of the sectoral committees. Their tasks are, among others, to promote the competence-based approach in VET, to develop, review and validate

qualifications for the sector and to cooperate in the development and validation of standards (Plugărescu, 2009). At local level, social partners are involved in educational planning through partnerships with schools or by membership of local development councils (LDCs). The LDCs also include representatives of the county employment agencies of the county school inspectorates and members of the regional consortia. The local component of curriculum (up to 30% in arts and trade school and up to 25% in technical high schools) is developed by each school in partnership with the local stakeholders, taking into account the local context and being complementary to the national curriculum.

Figure 8. **Constitution and operation of a working group in Spain**



Source: Ministry of Education, Culture and Sports of Spain, 2003, p. 18.

In Spain, working groups include professionals and training experts designated by the institutions represented on the General Vocational Training Council, which is itself composed of social partners and public authorities of the central and regional governments. These groups are supported by INCUAL, which provides the methodological input. In the design of the Spanish logistics qualification Coordination of transportation and distribution of goods, the curriculum development group included members of the Confederación Española

del Transporte de Mercancías (CETM, – Spanish goods transport confederation) and of the Confederación Española de Formación del Transporte y la Logística (CEFTRAL – Spanish confederacy of training in transport and the logistics). Figure 8 shows the actors involved in curriculum development and the information used to draft the curriculum.

In France, consultative commissions (*Commission professionnelle consultative*) were created by the Ministry of Education for each sector of the economy in 1972. The seats in these commissions are distributed according to legislation to ensure a balanced representation of different stakeholders (see in Annex 1 an example of stakeholder involvement in the design of logistics curricula in France).

A work group of about 10 persons is established for curriculum development, which includes professionals, inspectors, teachers and researchers. The work group reports regularly to the consultative commission about its progress; the commission discuss the drafts and passes an opinion to the Ministry of Education, which makes the final decision. According to the expert interviewed at the Ministry and CEREQ (Balas, 22 September 2009; Kirsch and Boudier, 10 April 2009), an informal division of tasks can be observed between the professionals and experts, who are especially involved in defining occupational standards, and teachers and members of the Ministry of Education, who take charge of the didactic and pedagogic aspects of curriculum development. Companies participate in curriculum development locally, being involved in training provision in internships, apprenticeship or projects, but their influence on learning programmes is limited, as the autonomy of schools is small in comparison to countries such as the Ireland, the Netherlands or the UK-Scotland.

In Ireland and the UK-Scotland, employers are also strongly involved in curriculum development, but the role of trade unions is weaker than in continental Europe. In further education, social partners participate in developing qualification standards or are consulted by the awarding bodies, the Scottish Qualifications Authority and the Further Education and Training Award Council (FETAC, Ireland). Training providers might also develop their own qualifications, which they often do in close partnership with employers. The Chartered Institute of Logistics and Transport offers courses and certificates in logistics in both countries. The focus of current reforms in Ireland is rationalisation of the qualification system, the objective being to centralise the development of new qualification standards under the leadership of FETAC. In the new system of curriculum development in further education, common awards will be developed following standardised processes, while learning programmes will continue to be developed by training providers but will be validated by FETAC. This will result in

new forms of stakeholder involvement at national level. Besides this, the involvement of local companies in development of learning programmes and in training delivery is still encouraged in both countries through specific programmes, such as Determined to succeed in the UK-Scotland.

In Poland, the forms of stakeholder involvement are not yet consolidated. Vocational qualification standards have been developed with participation from social partners in the framework of the project Preparation and propagation of national vocational qualification standards within the project human resources development 2004-06. The long-term objective is to establish a link between these standards and IVET curricula, but the standards are not yet used in curriculum development in IVET. Representatives of employers and branch organisations are appointed by the Ministry of Education as member of the groups in charge of the development of core curricula, but there is no institutionalised form of stakeholder involvement at that level. In the case study, it appeared that the school curriculum in logistics had been developed by one teacher alone, with the support of the staff from the Ministry of Education. Locally, companies sometimes cooperate with vocational schools to adapt learning programmes to the needs of employers, as reported by an interviewee who cited an example of a learning programme in banking. However, there are no institutionalised processes of involvement (Szalewski, interviewed 27 May 2009).

Another group of stakeholders involved in curriculum development in some cases are learners and parents. Learner-centred approaches should as such imply the participation of learners in curriculum development, as learning programmes should be devised to suit their individual needs and preferences. The question whether this is also to be observed in practice is examined in Sections 3.4.1 and 3.4.2. Some countries also offer involvement at school level. Learners and their parents play an important role in Slovenian school councils for the development of the school curriculum. School councils are the administrative bodies of each school which, in secondary schools, comprise representatives of parents, teachers, learners, the founders, and local authorities. Among other responsibilities, they must approve the yearly school education plan. Further, the parents' council, elected by the parents of each class, has the following tasks: suggesting and appointing additional programmes for the school; voicing their opinions about the yearly plan and the further development of the school; discussing parents' complaints; and electing their representative to the school council (Mlakar, 2007). In Poland, the parents' council in vocational schools had to approve the school curriculum when it was developed by an individual teacher,

but this is no longer the case following reforms to simplify the procedures for registering school curricula.

To summarise, new forms of stakeholder involvement in VET curriculum development are being adopted in some of the countries examined in this study (the Netherlands, Poland, Romania, etc.). While it is difficult to establish whether an outcome-oriented approach actually implies *per se* stronger stakeholder involvement, in some countries outcome-oriented curricula are presented as a means for increasing and broadening stakeholder involvement in training delivery and curriculum development. The typical argument is that learning outcomes operate as a 'common language' for the worlds of education and work. Dutch and German teachers interviewed in the study visits have diverging views on the acceptance of the outcome-oriented VET curricula by companies.

The acceptance of the new curricula by Dutch companies is perceived as very good. According to the Dutch teacher interviewed (Spoor, 10 July 2009), the reason for this is that competence-based learning is much more closely linked to the operational conditions and requirements in companies. Before the shift to competence-based curricula, the companies involved in apprenticeship did not apply the specifications contained in curricula because they were not realistic or because they appeared not to be feasible.

The 12 German teachers interviewed during the study visit indicated that new curricula for the school-based part of IVET, structured around 'learning areas' which reflect the work process, are not well accepted by the companies. Whereas subject-based curricula provide clearly defined limits to the knowledge base, the new curricular structure is said to conceal the real performance level of the learners and make their achievements less transparent.

3.3.3. Teachers in curriculum development: consequences for their training

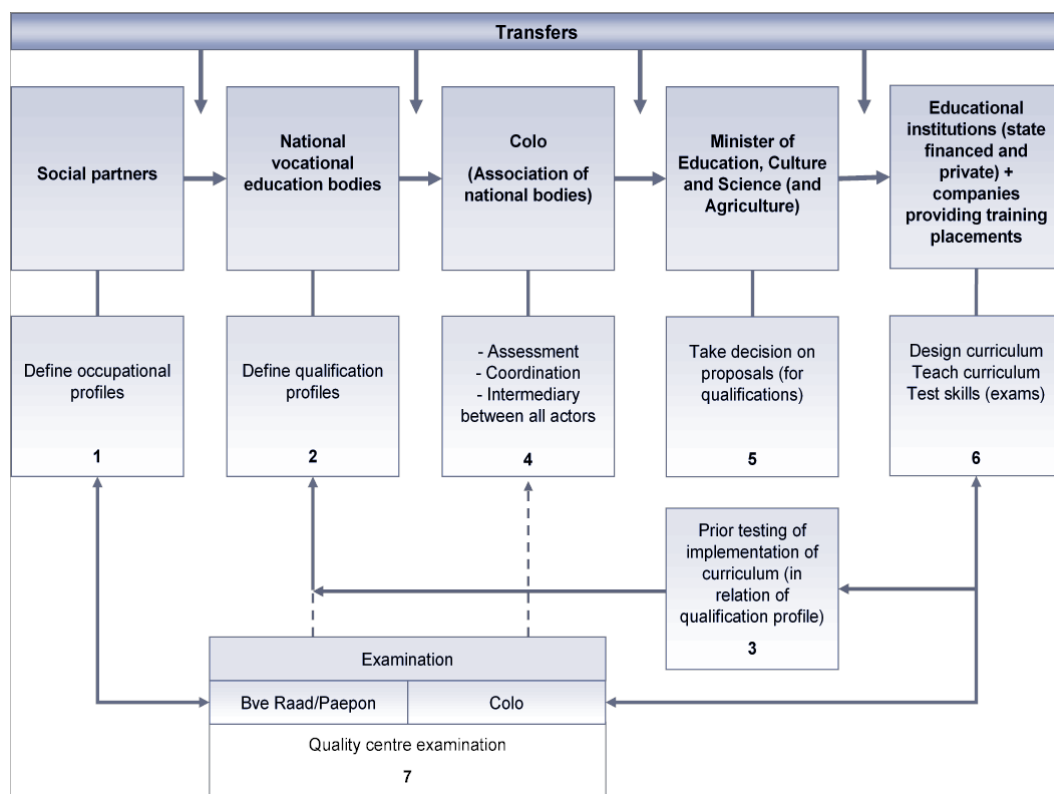
A high degree of autonomy of training providers and teachers in the development of learning programmes is consistent with the main idea of learner-centred approaches, which is to adapt the learning programme to the learners' needs. In new public management and governance approaches, curricula based on learning outcomes may contribute to the new distribution of responsibilities within the education system which is required to make systems more learner-centred (see Section 2.3). Another context in understanding the role of VET providers and teachers in curriculum development is the goal of making VET systems more responsive to the labour market, including regional labour markets.

In the countries examined in this study, the shift to outcome-oriented curricula has been accompanied in many cases by more autonomy and

responsibility granted to teachers and providers in curriculum development. However, this is not a general trend; some countries still stick to a centralised curriculum development process, while others have limited the autonomy granted to vocational schools after a period of decentralisation. This raises the issue of the pitfalls and success factors of such changes, especially in relation to teacher training.

A direct link between the introduction of competence-based curricula and new processes in curriculum development can be best illustrated in the case of the Netherlands. The following figure highlights the key role of training providers in curriculum development.

Figure 9. **Process of curriculum development in senior secondary vocational education and training in the Netherlands**



Source: Cedefop, 2005.

Qualification standards based on learning outcomes are defined nationally and VET providers develop the programmes for learners to achieve these outcomes. In addition, about 20% of the curriculum is developed by the VET providers independently. This has implications for the capacities of both teachers and quality assurance systems.

The study visit to the ROC Rijn IJssel near Arnhem revealed that VET providers cooperate closely to ensure synergy effects. Rijn IJssel is a member of a consortium of five regional training centres who define a common learning programme in logistics. This consortium is responsible for training 80% of the students in that particular logistics qualification. To deliver this learning programme in a learner-centred way, teachers and trainers have to take part in regular training. Teachers who do not have practical experience in companies have to complete a work placement of several days.

As a result of the increased autonomy since the adoption of the new curricula in 1996, quality assurance has been an increasingly important issue for training providers. In 1999 the Education Inspectorate made a start on integrated institutional supervision (*Integraal Instellingstoezicht*). This is geared towards analysing institutions with regard to a number of quality characteristics, such as the accessibility and efficiency of the primary process. An important item for attention is the quality of the examination process, of which, there is a great deal of criticism. The aim is to strengthen external legitimacy, which will be achieved by the Centre for quality of examinations (KCE). Considerable attention has also been devoted to quality with respect to practical vocational training (BPV). All the national bodies now have a scheme for accreditation of companies providing workplace training, in which the quality of the practical training is monitored on the basis of a number of criteria, such as the content of the work and the presence of a trained supervisor. The WEB also requires training providers to establish a quality assurance system and involve external experts in evaluations. The institutions have a large degree of freedom in establishing the system (Hövels, 2004). However, the system should be functional, and an institution must be able to demonstrate this fact to the outside world, at least in the four areas subject to statutory provisions by the government:

- (a) multiple goals: qualifications must be directed at the labour market, further learning and citizenship;
- (b) accessibility for vulnerable target groups;
- (c) efficient learning routes;
- (d) good advice, guidance and information provision.

In these four areas, the institution must report on its objectives, the results achieved, the discrepancies between objectives set and results achieved, and actions undertaken to ensure improvement. Every two years, each college accounts for its activities by publishing a fully open quality assurance report, describing the structure and results of its quality assurance process.

In Ireland and the UK-Scotland, further education can be considered as a market-led system and training providers have traditionally enjoyed a high degree

of autonomy. Recent reforms in that sector are focused on quality assurance. The shift to learning outcomes can thus be interpreted largely as a response to quality concerns, with measures to increase the accountability of training providers.

In Ireland, the motivation behind the introduction of learning outcomes in apprenticeship in 1991 was to introduce a new form of regulation, as the existing autonomy and the award of qualifications on the sole basis of 'time served' was felt to be threatening the quality of VET. According to the new system, accreditation of training providers will no longer be sufficient for offering courses leading to qualifications awarded by the Further Education and Training Award Council (FETAC). Training providers will also be required to apply for the validation of their learning programmes and the programmes will be monitored and evaluated by FETAC. Criteria for the evaluation of learning programmes in the validation process are defined as follows (FETAC, 2008, p. 5):

- (a) consistency with the award being sought i.e. the structure of the proposed programme should meet the award requirements at the relevant level within the framework of qualifications. There should also be consistency between the programme and the providers' quality assurance policies and procedures as agreed at the time of provider registration;
- (b) coherence in respect of its stated objectives, content, learner profile and assessment activities;
- (c) capacity of the provider to deliver the programme to the proposed level;
- (d) compliance with the Qualifications Act in relation to access, transfer and progression and protection for learners as appropriate and compliance with any special conditions attached to the certificate or component specification e.g. legislation, specialist resources;
- (e) the programme's potential to enable the learner to meet the standards of knowledge, skill and competence for the awards based on the specified learner profile and the standards for the award.

In the UK-Scotland, quality assurance systems ensure that providers are in a position to deliver learning programmes leading to the accredited qualifications. In the course of the reforms for 'a curriculum for excellence', efforts have been made to develop teacher and trainer training. According to expert interviews, there has been an increase in continuing professional development provision by the Scottish Qualifications Authority and by the Scottish Further Education Unit (SFEU) and all teachers and trainers in further education need to have a formal teaching qualification, which was not the case before. New professional

standards for lecturers in the UK-Scotland's colleges ⁽²¹⁾ were published in June 2006. They provide the basis for many qualifications, such as those approved by the Further Education Professional Development Forum (FE-PDF), a strategic and operational group made up of practitioners from both the further and higher education sectors and a range of associated partners ⁽²²⁾. The standards address 'planning and preparing the learning experience', devising the learning outcomes which should be achieved and the underpinning skills and knowledge. Standards on curriculum development and management of curriculum development teams are granted a high degree of importance.

The *Lernfeldkonzept* (learning areas) introduced in 1996 also has an impact on school-based learning in VET in Germany in terms of curriculum development and the role of teachers and schools (Ertl and Sloane, 2003). Whereas curricula for vocational schools used to be strongly prescriptive in terms of contents, aims and time allocated to contents and aims, curricula based on the concept of learning areas are less constraining. Responsibilities for curriculum development are transferred from the state to the training providers. Using outcome-oriented descriptions of the learner achievements in each area, workable aims and operational contents for teaching are developed at vocational school level. Translating curricula into learning programmes and learning arrangements becomes part of the work of teachers, with some consequences for the internal organisation of schools. For instance, teachers have to cooperate as a team to develop schedules and lessons plans to meet the curricular guidelines. The responsibilities of teachers increase and the tasks they are asked to fulfil become more complex. To face these challenges, teachers can take part in in-service training, but this is not an obligation. The teachers interviewed in the study visit reported that they are responsible as a team for identifying their own training needs and applying for courses. In the case of that particular school, logistics teachers cooperate with two other vocational schools to coordinate in-service training provision and apply together for funds from the state. The teacher interviewed in Hamburg reported that, in his opinion, the most important factor in implementing curriculum change, and especially in changing teaching practices to more learner-centred approaches, is further education and training for teachers. In his view, a particularly effective setting is in-house training, with teacher training and coaching organised for all teachers at school.

Spain, Poland, Romania and Slovenia offer examples of the efforts undertaken to grant more autonomy to teachers and schools by defining a school

⁽²¹⁾ <http://www.fepdfscotland.co.uk/documents/Professional%20Standards%20for%20Lecturers.pdf> [cited 9.10.2009].

⁽²²⁾ www.fepdfscotland.co.uk [cited 9.10.2009].

curriculum supplementing the centrally defined one. In Spain, the central government is responsible for designing 65% of the curriculum (55% in those autonomous communities which have their own language); the additional curriculum at regional level differs between the Autonomous Communities. The training providers have then to adapt the curriculum of the national and regional level and to develop their annual programmes. The annual programmes are designed by the teachers' assembly through stage projects and build the basis for teaching in study programmes. Schools have also been granted the potential to develop an additional curriculum, up to 10% or 20% depending on the region, but new restrictions in form of an authorisation and validation procedure are being prepared, after some schools were discovered to be misusing the allocated time for other purposes such as administration. The school curriculum enables the schools to adjust education to the characteristics of the students and to regional needs, but always within the limits defined by national and regional curriculum and other regulations issued by the educational authorities. The following information must be stated in a school curriculum: duration and time schedules of each module; organisational aspects of the workplace module; guidelines for teaching methods and assessment; and other aspects like vocational guidance. The last stage in curriculum development is the development of the didactical programme by the individual teachers. The didactical programme breaks down the school curriculum into separate work units of teaching, and specifies and adapts the school curriculum to a particular group of students (Jiménez Chinea, 2004).

In Romania, schools develop a local curriculum in partnership with local stakeholders to complement the national curriculum. This local part accounts for up to 30% of the curriculum in arts and trade school and up to 25% in technical high schools. To ensure the quality of the provision of IVET, the school curricula have to be approved by the County School Inspectorates (Cedefop and ReferNet, 2009b).

The case of Poland illustrates how difficult it is to find a balance between national and local curricula. A first reform in 2002 was meant to give teachers greater autonomy to develop their own curricula using a curriculum framework defining learning outcomes; however, the procedure for development and approval appeared so complicated and the process was felt to be so demanding, that few teachers engaged in curriculum development. New curricula and new procedures are now being developed and in 2011 will aid school and teacher involvement in curriculum development.

France is an exception with regard to curricular autonomy. Except in higher education, public education curricula are developed nationally and leave little

room for initiatives at school level. Besides programmes determining the outcomes, the place, the content and the duration of training and education, recommendations are issued concerning learning arrangements; the autonomy of public training providers is comparatively small. In the wake of the reforms introducing learning outcomes in IVET curricula in the 1980s, expert interviews revealed that large efforts had been made to inform and train teachers to deal with the new curricula. The last important curriculum reform in terms of a shift to competence-based approaches was the adoption of the Common base of competence, a set of key competences which is progressively included in curricula in compulsory education as well as in upper-secondary IVET. This last reform has been accompanied by changes in the standards of teacher and trainer training. Learning outcomes are not explicitly mentioned in the standards for pre-service training and teaching (*Référentiel de compétences des maîtres*) but it is stated that *teachers should be able to*:

- *define learning objectives on the basis of official documents;*
- *think in terms of competences, i.e. to identify the stages needed for the progressive acquisition of the required knowledge, abilities and attitudes in relation to prior learning and needs, and to plan and implement:*
 - (i) *a learning plan for one year and for the complete education cycle;*
 - (ii) *a learning plan adapted to the different needs of the learners.* ⁽²³⁾

Teaching practices and teacher training is an important issue in the political debate under the heading of 'professionalisation'. Teacher training and recruitment has traditionally put the focus on qualifications in the discipline, even for VET teachers, with very little attention paid to didactical and pedagogical aspects. Despite some efforts to include pedagogical and practical training in the curriculum for teachers, the most recent reforms are still criticised for being too weak. Some teachers unions criticise the fact that recruitment examinations do not include a practical part in class (Café Pédagogique, 2009). Instead, candidates are asked to prepare and present a lesson to a jury. The practical part is also seen as being too small in learning programmes for master's degrees exam preparation. According to the administrative memo from the Ministry of Higher Education and Research addressed to university rectors on 17 October 2009, internships must be organised in teaching and training institutions and must be reflected in courses at university to establish a dialogue between practice and theory (Ministry of Education of France, 2009).

⁽²³⁾ *Cahier des charges de la formation des maîtres en institut universitaire de formation des maîtres, 2006.*

It seems that the most direct implication of outcome-oriented curricula with regard to making systems more learner-centred is the new autonomy and the role granted to teachers and training providers in curriculum issues. In most countries examined, the shift to an outcome-oriented approach and the increased importance of learning programmes to translate curricula into practice are directly linked. As demonstrated by countries which already have a long experience in granting autonomy to training providers, such as Ireland in their further education sector and the UK-Scotland, a major issue arising in that context is quality assurance. Some countries have had to readjust their system to take this into account, such as Spain. Another issue is the competence of teachers and trainers as well as school managers, who are required to develop complex learning programmes for their learners to achieve the intended learning outcomes defined nationally. A detailed analysis of the quality and efficiency of teacher training provision in the nine countries examined here goes beyond the scope of this study, but these preliminary findings certainly call for further research and attention from policy-makers (see Sections 5.3 and 5.4).

3.4. New approaches to teaching, learning and assessment in VET curricula

The use of learning outcomes in curricula, although generally a means for granting more autonomy and responsibility to training providers and teachers over training delivery, does not lead necessarily to less attention being paid to teaching, learning and assessment processes. On the contrary, debates about the implications of learning outcomes and competence-based approaches on assessment and on learning processes seem to generate renewed interest in pedagogy and didactic. As a result, recent curriculum reforms in almost all the countries examined in this study have been addressing these issues through different approaches, for instance by 'enriching' the curriculum (see Section 3.2) and/or making changes in the training provision of teachers and trainers.

3.4.1. Curriculum reforms, teaching and learning methods

Changes in teaching and learning methods relating to competence-based approaches can be found in pedagogic and didactic discourses both in written curricula and in teaching practice. Overall, these changes aim for the following:

- (a) combination of theoretical and practical learning, for instance in schools and at the workplace, as well as combination between theoretical knowledge and practical skills;

- (b) greater involvement of learners in the learning process, implying growing importance of independent and self-regulated learning in school and work.

The theoretical background to these changes was presented in Section 2.1. According to Dubs (1998), a change of paradigm can be observed in recent years, with the increasing popularity of constructivist teaching and learning forms. In this context, self-directed learning and complex learning situations are key concepts, with implications for teachers and trainers whose role is to prepare learning arrangements meeting the learner's needs and become an advisor in the learning process.

A first source of information to explore the effects of learning outcomes and competence-based approaches on teaching methods and learning arrangements are curricula and accompanying documents from official sources, such as Ministries and support agencies. From these sources, it is possible to identify an immediate relationship between learning outcomes and teaching approaches conveyed at policy level (Section 3.4.1.1). Implementation at school- and class-level must be examined as a separate step, since there is no comparable empirical data available for all nine countries. Expert interviews and the study visits in Germany and the Netherlands provide some information to complement the findings of literature reviews (Section 3.4.2.2).

3.4.1.1. *Setting the framework: teaching approaches in written curricula*

Among the countries examined, Ireland (prevocational education), France and the UK-Scotland (Curriculum for excellence) offer most examples of curriculum provisions concerning teaching methods and learning arrangements. In the other countries, curricula do not specify teaching methods and learning arrangements, but support materials developed for teachers and trainers give us some hints about changing approaches to teaching.

In France, the introduction of learning outcomes in IVET curricula also had the aim to reform teaching practices, especially in strengthening the link between school and work practices and making teaching more learner-centred.

A reform launched in 2000 promoted project-based learning through the introduction of the PPCP (*projet pluridisciplinaire à caractère professionnel*) in IVET curricula at upper-secondary level. The objective of the PPCP – a multidisciplinary project with a professional character – is to provide a framework for developing competences in a situation as close as possible to 'real work life'. Between 100 and 200 hours can be dedicated to the PPCP depending on the study programme. Teachers from various disciplines need to organise the PPCP together and in partnership with external actors such as companies. Examples of such projects in logistics programmes leading to the *Baccalauréat professionnel*

are the collection and transfer of textbooks and other teaching materials to a school in Morocco, the design of a logistics game, or the design of a system for collecting and transporting wastepaper to a recycling complex⁽²⁴⁾. Some projects simulate real work situations, while others aim to solve a 'real' problem. In general, an evaluation report by the Inspectorate on implementation of the PPCP reveals that the type of projects and the selection of learning outcomes addressed by the project are dependent on the initiative of individual teachers and the leadership qualities of headmasters (Aublin et al., 2001). Although this instrument was conceived to introduce the 'industrial logic' in teaching, some analysts point out existing contradictions when it comes to implementation. The industrial logic, which is based on the work process, is, in practice, often replaced by a 'pedagogical logic'. The latter is based on the principle of progressive accumulation of knowledge and skills. Teachers tend to choose or conceive projects with regard to which competences and associated knowledge will be covered, without regard for the question of whether such projects are 'realistic' in a professional context (Eckert and Veneau, 2000).

The creation of the *Baccalauréat professionnel* in 1985 introduced compulsory periods of work-based learning in the IVET curriculum for specific occupations; this was progressively extended to all IVET curricula during the 1990s. In vocational school curricula (upper secondary level), periods of training in enterprises are now compulsory for a total of between five and 18 weeks over two years. Alternation between workplace and school-based learning is seen as an important means of developing competences. Workplace training allows students to contextualise their knowledge and skills and integrate them to be able to perform in a professional situation. According to Jonnaert et al. (2005), such competences developed in a concrete situation are, however, 'incorporated' in that situation. To enable the learner to be competent in another situation, it is necessary that he/she reflects on the experience and identifies 'schemes' or 'structures' which will help to adapt knowledge and skills to new constraints and resources. Alternation thus raises the question of the links between workplace training and school-based teaching. An empirical study of interviews with 141 teachers in vocational schools across France by Courtas and Castellan (2006) on the pedagogical practices linked with internships and work-based training produced the following results:

- (a) 27% of teachers claimed that internships are not the object of collective pedagogical reflection;

⁽²⁴⁾ More examples to be found in the database of PPCP of the academy of Rennes: <http://www2.ac-rennes.fr/ppcp/result.asp> [cited 22.11.2009].

- (b) the majority of the respondents stated that cooperation between teachers from different disciplines is limited to the organisational aspects of training, without real reflection on the objectives and challenges. Accordingly, activities in school mainly concern debriefing after the training period and writing an internship report. Activities such as individual accompaniment of the learner and reflection on experiences and knowledge gained in the work place are rarely performed.

In brief, the authors identify two kinds of practice. The first is focused on teachers, with experiences during the training period used as a starting point for school-based teaching. The second, which is far less common, is focused on the learner and the development of his/her competences. Teachers were also asked to describe their own practice, and the following answers were given:

- (a) 50% of teachers organise school-based teaching contents related to workplace training 'from time to time', 35% 'mostly' (and in that case it is rather in the disciplines directly involved in the writing of the internship report);
- (b) 70% use and integrate experiences of work-based training in class 'whenever they have the opportunity to';
- (c) 50% spontaneously modify the teaching session to integrate reports from the learners on their workplace experience 'whenever the opportunity arises', and 50% do so 'exceptionally or never';
- (d) 90% 'exceptionally or never' organise extra sessions, not initially planned, to work on experiences from the workplace.

Beyond these learning arrangements, the curriculum in France does not include specifications concerning the choice of pedagogic methods. However, accompanying materials and publications from the inspectorate encourage the use of active learning methods and individualised approaches. A booklet developed by the regional education administration of Orléans-Tours for teachers in logistics (10th grade) provides a good example of materials supporting active learning for the written curriculum. In the introduction to the manual, which contains many examples of suggested activities, evaluation grids and hints on the organisation of classes, the author presents the key principles of learner-centred teaching which should be implemented:

'This booklet is a guide to the education of students in the 10th grade of vocational studies. It is focused on a learning process structured by the development of a professional project and the progressive acquisition of competences during the study year. So as to reach these two objectives, it is necessary, in the framework of the teaching and training project, to organise courses, visits in companies, internships, meetings with professionals, meetings with former students, etc. The position of students will be determined through

individual interviews. According to the needs identified in the interview, the student will be proposed adequate activities through a contract with limited and measurable objectives, so as to help him progress thanks, among others, to individual assistance. Guiding each student must be the priority of the entire pedagogic team. This step is thus fundamental to avoid dropping out of the school system. The pedagogic team must identify the individual needs of each learner and develop adequate measures to help him make progress (project adapted to the student's profile, individual assistance, innovative pedagogy, use of ICT ...).' (Boyeault, 2009, p. 4).

Further sociological research has observed different teaching practices in vocational schools illustrating this shift of paradigm described by Dubs (Jellab, 2005):

- (a) more individualised learning, small group works, attention paid to the needs of the individual learner, including social and psychological aspects;
- (b) taking 'concrete' examples to develop more theoretical aspects, starting with visualisation and manual exercises before coming to more cognitive activities;
- (c) selecting (sometimes through a negotiation process between teachers and learners) themes more 'interesting' for students, especially in general education subjects such as literature, arts and sports;
- (d) active involvement of learners in class, for instance through a collective, problem-based approach;
- (e) alternating practice and theory;
- (f) actively developing social competences;
- (g) using evaluation to motivate students, for instance by giving better grades at the beginning of the training programme. Some teachers make an informal distinction between 'academic grades' (a 10/20 is a 'pass') and 'professional grades' (only pass or fail).

However, these practices, which point to a more learner-centred approach, are related by the teachers and trainers to the changing profile of learners rather than to the introduction of competence-based approaches in curricula. According to the interviewees, learners can no longer be motivated by 'traditional' instruction methods. Contributory reasons include that learners have experienced difficulties at school and need to be motivated and reconciled with school as an institution; their self-esteem needs to be restored; they are unable to concentrate for a long period of time; and they lack basic social skills which are essential to complete a training programme and find a job. In such cases, there is probably a multiplicity of factors accounting for the adoption of active learning practice, with changes in the curriculum being only one among many.

In the UK-Scotland, teachers and trainers have a large degree of autonomy when it comes to teaching methods (Gray, 2008, p. 21). Research and evaluation reports highlight the diversity of practices ⁽²⁵⁾. 'A curriculum for excellence' sets a series of principles which should guide teachers and trainers, the main ones being (May Sweeney, interview 30 April 2009):

- (a) cooperative learning;
- (b) active learning;
- (c) student-centred approaches;
- (d) recognition of achievement rather than narrow attainment.

Support materials for teachers and trainers made available by the government agency Learning and Teaching Scotland, especially a new website with an intranet accessible to all schools in the UK-Scotland ⁽²⁶⁾, reflect these principles. In a section 'learning about learning', teachers are invited to reflect on theories about learning and their implications for teaching practice. Guidebooks present ideas and examples on how to implement new approaches and learning arrangements.

In practice, according to a summary of reviews carried out by Her Majesty's Inspectorate of Education in 2004-06 in further education colleges regarding 'Learning and teaching processes', 43% of the colleges deserve the grade 'very good' and 56% 'good' (HMIE, 2007, p.5). Among the strengths, the inspectors mention that the staff *identified appropriate learning goals for learners and planned activities to ensure they were able to achieve their learning objectives*. Research into pedagogic practice in further education colleges in England (Young and Lucas, 1999) shows the diversity of learners attending these colleges (young adults, people with work experience, all with many cultural and ethnic diversities) as a factor contributing to increasing use of flexible learning approaches. Flexible learning basically consists of *improving the access to learning and freeing learners from their dependence on teachers or fixed class hours* (Young and Lucas, 1999, p. 106). It encompasses workshop learning and the use of ICT and e-learning. The authors point out that the methods adopted are mostly individualistic, failing to take into account some essential features of learning (Young and Lucas, 1999, p. 107):

- (a) learning is a social process involving learners participating in 'communities of practice';

⁽²⁵⁾ The report by HM Inspectors for the Scottish Funding Council on Engineering in Scotland's colleges (October 2007). Available online:
<http://www.hmie.gov.uk/documents/publication/eisc.html> [cited 9.10.2009].

⁽²⁶⁾ <http://www.ltsotland.org.uk/glowscotland/index.asp> [cited 26.11.2009].

- (b) learning is a situated not a generic process and always takes place in a context;
- (c) contexts must not be seen as bounded but themselves mediated by wider contexts from the organisational to the global level;
- (d) it is important to distinguish between different types of learning and their interdependence;
- (e) although a learner's previous experience must be taken into account, learning also involves being immersed in ideas that can provide the basis for reflection on that experience.

The weaknesses of flexible learning approaches highlighted by the authors focus on the mix of methods adapted to particular learners. It is the same problem mentioned by Dutch and German teachers in the study visit: 'fashionable' teaching methods being too open and too demanding for certain groups of learners (see Section 3.4.1.2).

In Ireland, the introduction in 1995 of the Leaving certificates applied programme was marked by efforts to develop learner-centred curriculum reforms. The curriculum, which is modularised and based on learning outcomes, was influenced by new approaches to learning. *The courses and modules followed offer a broad, balanced curriculum leading to personal and social development and vocational orientation of participants. Perhaps the most distinguishing feature of the Leaving certificate applied is its emphasis on participants learning by doing, applying knowledge and skills to undertaking tasks and solving problems in an integrated way in the real world. In doing so, there are significant levels of interaction with the local community, particularly employers* (Cedefop, Gleeson, 2003, p. 102). In the programme statement for the Leaving certificate applied, the following teaching methods are defined (NCCA, 2001):

- (a) use of teaching styles which actively involve the participants in locating and using relevant information, and which promote personal responsibility, initiative, independence, reflection, self-evaluation, self-confidence and cooperation;
- (b) a variety of teaching and learning processes including group work, project work and the use of individualised learning assignments;
- (c) promotion of communication, literacy, numeracy and other generic skills across the curriculum using a range of media;
- (d) promotion of equity in all its aspects, including gender;
- (e) development of teacher skills in evaluating their own performance;
- (f) identification and use of teaching and learning resources in the local community and interaction with employers and enterprises;

(g) a teaching approach designed to address and meet the needs of the participants.

Empirical studies among students presently or formerly enrolled in Leaving certificate applied programmes revealed some difficulties in conveying the cross-curricular approach to students: the majority continued to think in terms of subjects. However, surveys also showed a perceived difference in learning compared to standard school experience. Respondents stressed such elements as team work, more self-directed learning, different relationship to teachers, work-based learning leading to the development of new competences such as computer skills and job-searching skills (Granville, 2008, p. 189).

In Spain the VET curriculum does not provide guiding pedagogic principles for specific vocational training, as is the case for general education. The Real Decreto 1538/2006 only indicates that teaching methods should integrate relevant scientific, technological and organisational aspects to provide students with a global overview of productive processes in the specified professional activity (Real Decreto 1538/2006). Nevertheless, changes in teaching methods implied by curriculum reforms are widely acknowledged. Martínez Usarralde (2007, p. 730) states, for instance, that the most recent curricular reforms, which are based on the principles of 'comprehensiveness' and 'diversity', require

'[...] a change in the teaching methods. The reform of the methodology introduces the following changes: first, there is a change in the psychological approach to the curriculum (from an evolutionary approach focused on teaching to a constructivist approach more focused on learning), second, there is the provision of a greater amount of material and human resources in order to achieve real attention to diversity and individualised teaching. According to the author, competence-based education implies that teaching methods must encourage pupils to form a global and coordinated view of the productive processes in which they will participate. They should also foster pupils' ability to learn individually and work in a team' (Martínez Usarralde, 2007, p. 731).

The educational departments of the Autonomous Communities have taken measures to encourage innovations regarding, among others, distance learning, open learning, e-learning, modular training structure and self-teaching professional training programmes. The national prizes for educational research and innovation reward the work of teachers in modernising pedagogy. Prizes for educational innovation are attributed for innovative practices improving educational work in relation to the development of basic competences, intercultural education, new information and communication technologies, equal opportunities for men and women and value-oriented education (e.g. road safety, health, environment, living together and peace education) (SPEE-INEM, 2008).

Even though Spanish teachers are free to choose their teaching methods, the importance of modern and creative methods seems to be widely acknowledged. Besides information and manuals on developing school curricula, the education administrations of the Autonomous Communities publish guides on teaching methods to give assistance to teachers and to encourage new teaching practice. The Basque institute of qualifications and professional education has published guidelines on developing the school curriculum which also provide the teachers with information on teaching methods and on how to apply them. New teaching methods are recommended, such as project learning, problem solving, group work methods (for instance jigsaw), student team learning, reciprocal teaching and cooperative learning (KEI-IVAC, 2008).

In Slovenia, interviews with teachers in the case study on logistics indicated that the main teaching methods are the frontal method (lectures), demonstration (showing films and pictures), excursions and field trips, and discussion with students about the taught materials. Changes introduced following the new curricula enable the students to become more active during the learning process and to establish links with other fields of knowledge (Prasnikar and Sedmak, interview 4 November 2009). Other Slovenian teachers reported that teaching practices in their school have been changing following the introduction of new curricula. They expect better achievements by learners thanks to the increasing use of computers, to project-based learning and to e-materials, which are improving and becoming more attractive to students and teachers (Krajnc and Rebevšek, interview 22 September 2009).

The cases of Germany and the Netherlands deserve to be further analysed, as the study visits conducted for the purposes of this study, provide new empirical data on teaching and learning practices in vocational schools, which can be compared to these described in the written curricula.

In the Netherlands, the WEB does not include specifications regarding teaching methods. It is up to the training providers themselves to organise courses and teaching in such a way that students are able to obtain a diploma. There are many examples of modern, attractive programmes that link teaching closer to professional practice, for example so-called workstation structures and using modern equipment. Teaching subjects is restructured to be more focused on competences. According to evidence, self-directed, participatory and project-based learning dominate in vocational schools, the transmission of a body of subject-based knowledge no longer being the primary concern. The focus lies on the way in which learners construct situated knowledge and learn to learn by doing so (Onstenk, 2008; Sanden, 2004).

In Germany, curricula do not impose the use of particular methods, but didactical principles and the action-oriented approach based on the concept of 'vocational competence' are described in curriculum documents for vocational schools. The need to adapt learning programmes to the individual needs of the learners is stated. Curriculum documents stress the main implication of the competence-based approach: the link that must be established between the learning content and the professional situation. The learning process must

'focus on action-oriented competence and enable young people to autonomously plan, execute and assess professional tasks in the framework of their professional activity. Learning in vocational schools happens in relation with concrete professional acts as well as in numerous cognitive operations, including understanding other's actions and behaviour. This learning is especially based on reflecting upon professional activities (the plan, the implementation and the results). It provides the basis for learning at work and from work' ⁽²⁷⁾.

The curriculum further defines the principles for planning learning processes:

- (a) the didactical reference are situations, which are relevant for professional activities (learning for action);
- (b) the starting point for learning are activities which are executed by the learner or on which the learner reflects (learning through action);
- (c) as far as possible, the learner should plan, execute, check, correct and assess the activities autonomously;
- (d) activities should address multiple aspects of real work processes, for instance technical, safety-related, economic, legal, environmental and social aspects;
- (e) activities must integrate experiences of the learner and be reflected regarding their impact on society;
- (f) activities should also address social processes such as clarifying interests and conflict management.

Besides these basic principles defining the competence-based approach in German VET curricula, self-directed learning is also encouraged. E-learning is leading to increasing flexibility regarding the place of learning and is explicitly mentioned as an important element of the national strategy for lifelong learning.

In the work-based part of the dual system, the action theory conception of autonomous and cooperative working calls for integrated learning, which has

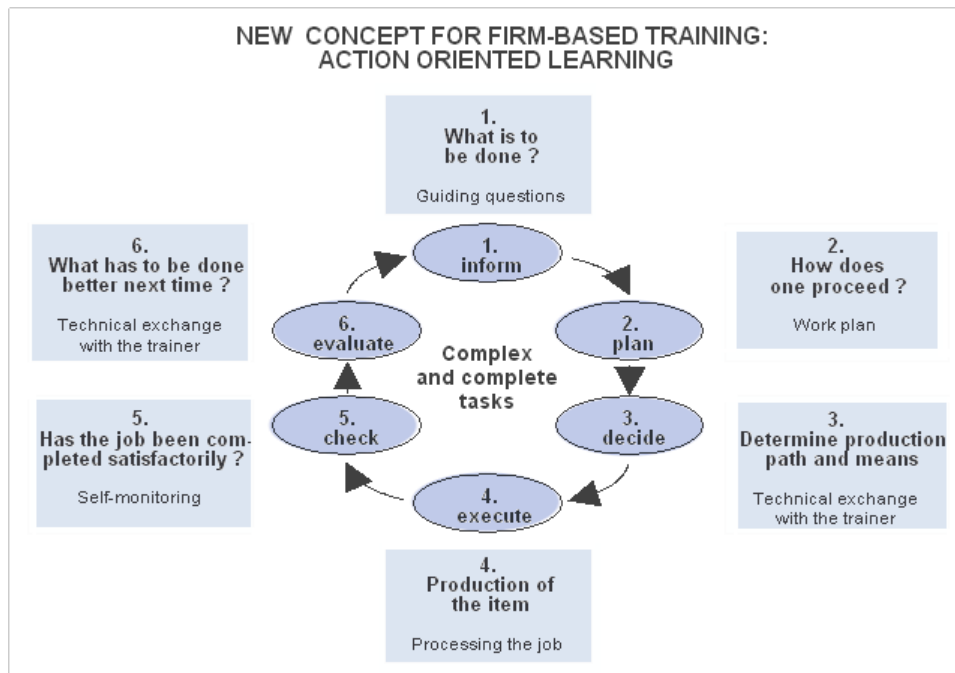
⁽²⁷⁾ Excerpt from the introduction to the school-based curriculum in logistics (*Rahmenlehrplan Fachkraft für Lagerlogistik*, 2004). A similar introduction is found in all curricula for the dual system in VET since the reforms introduced in 1996.

implications for the training activities and the role of the trainer. The trainer is no longer primarily the superior and demonstrator but becomes an adviser and moderator. New training materials and media are provided, offering opportunities for independent learning and, at the same time, tutorial assistance in working through complex tasks.

Put into practice, the new concept of action orientation in work-based learning could look like this. A certain item of the syllabus is addressed by a project; rather than using the traditional four-step way of preparation-demonstration-imitation-exercise, the trainees take six steps in teamwork to carry out their tasks:

- (a) the trainees are given a task plus basic explanation, if necessary. They try on their own to find the information they need;
- (b) the trainees plan and organise necessary steps and resources;
- (c) the plan is discussed with the trainer who supports decision-making;
- (d) the trainees execute their plan in teamwork largely unaided or, in the case of complex tasks, in a team;
- (e) the trainees control, discuss and assess the final product. This check should be carried out first and foremost by the trainee himself, so that he learns to judge the quality of his own work;
- (f) after self-monitoring, the trainees present their results to the trainer. They discuss problems, difficulties, and draw conclusions for future activities.

Figure 10. **Concept of action-oriented learning in companies**



Source: Rebmann et al., 2005, p.183.

Anyone who sets out to examine the conditions in training firms and part-time vocational schools is confronted with a variety of different learning circumstances (Achtenhagen, 1994). It is relatively uncontroversial to say that technical innovations and changes in the organisation of work lead to new requirements, increased cognitive demands, a greater degree of abstraction and a greater need for flexibility and mobility. Despite several research and pilot projects (*Modellversuche*) carried out to test different learning methods in work-based training, there are no representative studies on teaching and learning practices in companies in the dual system. An empirical study in vocational schools in the dual system (Pätzold et al., 2003b) came to the conclusion that more than 80% of the teaching and learning processes take place in classical learning environments, i.e. in the typical instructional way of teaching.

3.4.1.2. *Exploring the practice: teaching and learning approaches in Germany and the Netherlands*

The study visits conducted in vocational schools in Germany and the Netherlands do not provide representative data on teaching practices in those countries. However, they illustrate whether emphasis is given to active learning methods and a more learner-centred approach, while raising the question of what other factors, besides the curriculum, influence teaching practices in VET.

The ROC (Regionaal Opleidingen-Centrum) Rijn IJssel in Arnhem is one of the 44 regional VET centres in the Netherlands. It consists of 31 vocational schools in Arnhem and its surroundings and has 1 200 employees and 15 000 students. Programmes are offered in 13 fields in school-based and in apprenticeship settings at upper-secondary level (*Middelbaar Beroepsonderwijs – MBO*).

Teacher interviews and a student survey were conducted in the logistics programme leading to the level 3 qualification *Logistiek teamleider*, with most students taking the apprenticeship route. The ROC Rijn IJssel works in a consortium with four other ROCs. Together, these ROCs manage apprenticeship programmes accounting for 80% of all students in *Logistiek teamleider*. There are 50 students presently enrolled in Rijn IJssel in this programme which is competence-based.

During the study visit, 29 second-year logistics students were asked to complete a questionnaire on teaching and learning methods and one in-depth interview was conducted with their teacher in logistics.

In Germany, two vocational schools were visited. One is part of the consortium of vocational schools *Berufsbildende Schulen Oschersleben, Europaschule*, offering programmes in 10 occupational fields, of which logistics is

the largest and accounts for one third of the students (534 in 2009/10). Around 1 500 students attend courses at the four different school forms (full-time schools or dual system), which employ 63 teachers. The title *Europaschule* is awarded by the Ministry of Education to schools offering European education courses and setting a focus on language skills. The school cooperates closely on teacher and trainer training with other vocational schools in logistics in the cities of Bitterfeld and Halle.

The second vocational school Staatliche Gewerbeschule Werft und Hafen visited in Hamburg has around 2 200 students, of which 1 000 are enrolled in logistics programme and 250 in the programme leading to the qualification *Fachkraft für Lagerlogistik*.

Teacher interviews and student surveys were conducted in the logistics programme leading to the qualification *Fachkraft für Lagerlogistik*. This is a three-year programme which all students at that school take in the system of apprenticeship, combining workplace training and school-based learning. The curriculum was revised in 2004 and includes subjects in general education and vocational subjects. Vocational subjects are taught in courses organised according to the principle of 'learning areas'.

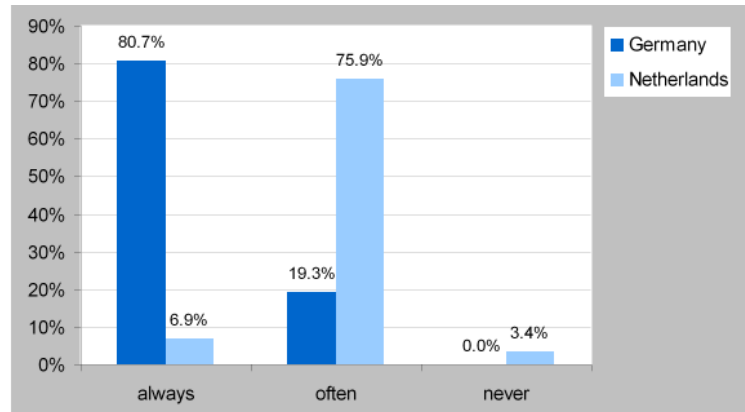
During the study visit, 58 students in their second year of training at the Berufsbildende Schulen Oschersleben, Europaschule were asked to complete a questionnaire. Their 12 teachers of vocational subjects involved in the school's logistics programme provided a written answer to a qualitative questionnaire. In the Staatliche Gewerbeschule Werft und Hafen, two logistics teachers were interviewed.

The study visits in Germany and the Netherlands show that the paradigmatic change from teacher-centred to learner-centred approaches is taking place but quite slowly, only in some courses and with significant differences between the two countries.

The most striking similarity between the German and the Dutch vocational school is the persistence of teaching styles typical for teacher-centred approaches. The students in both countries report that they often have only to sit and listen while the teacher talks (in Germany, 75.4%, the Netherlands 55.2%). Some 66.7% of German and 62.1% of Dutch students consider that they often have to answer questions which call for one specific answer. The leading role of the teacher is also visible when students are asked whether they are involved in deciding about what will be done in class: 100% of the German respondents and 82.8% of the Dutch say that it is 'always' or 'often' the teacher who takes the decision. The Dutch students are, however, more often involved than the

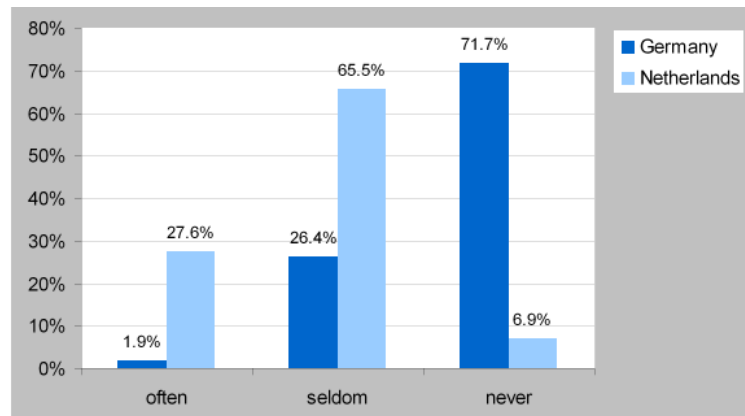
Germans: 65.5% say that they 'seldom' decide what will be done in class, whereas most German students state that they 'never' take this decision.

Figure 11. **How often does the teacher decide what will be done during the session?**



Source: Cedefop.

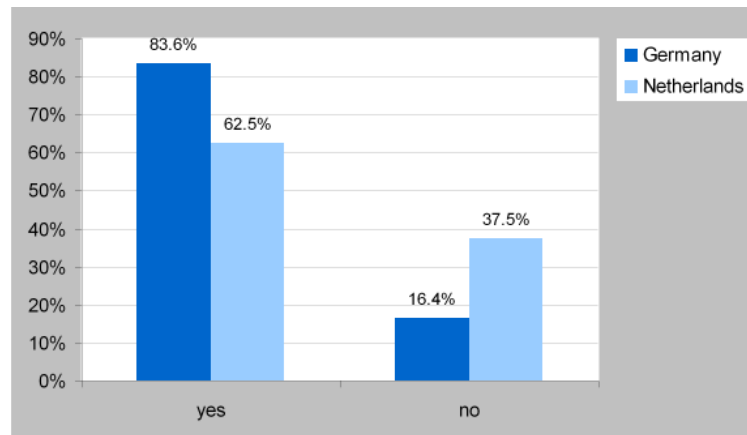
Figure 12. **How often do the students decide what will be done during the session?**



Source: Cedefop.

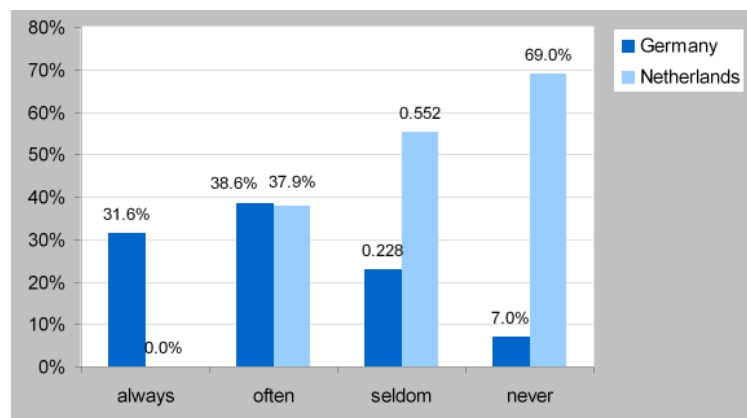
Generally, the students interviewed in both countries consider themselves to be well-informed of the content and expected learning outcomes of the training ordinance or curriculum (see Figure 13). In Germany, nearly 70% of the students report that their teachers explain the learning objectives of each training session 'always' or 'often', compared to 37.9% of the Dutch respondents (Figure 14).

Figure 13. **Do you know the contents and learning objectives written in the training ordinance?**



Source: Cedefop.

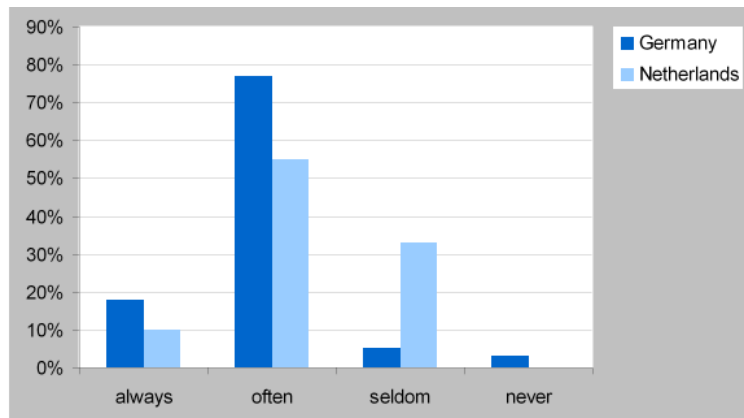
Figure 14. **How often does the teacher explain the content and objectives of a session?**



Source: Cedefop.

Another striking similarity is in the use of computers in coursework. Both groups of students indicated that they are using a computer in many courses (Germany 21.1%, the Netherlands 24.1%) or at least in some courses (Germany 36.8%, the Netherlands 41.4%).

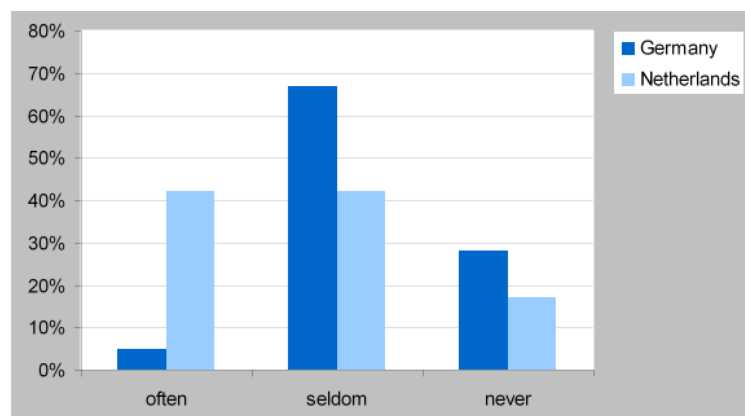
Figure 15. **How often do lectures in vocational courses look like ‘we sit and listen, the teacher talks?’**



Source: Cedefop.

The most important differences between the two countries is in learning methods, with group work far more popular in the Dutch school than the German one. Only 5.8% German students indicated that they often work in groups (26.9% say it never happens), compared to 41.1% of the Dutch students. Activating and learner-centred methods seem to be used more in the Dutch classes where project work seems to be carried out on a regular basis. Dutch pupils mainly have projects in some (31.0%) or many courses (20.7%), while 37.0% of German pupils say that projects are never used.

Figure 16. **How often do you work in groups?**

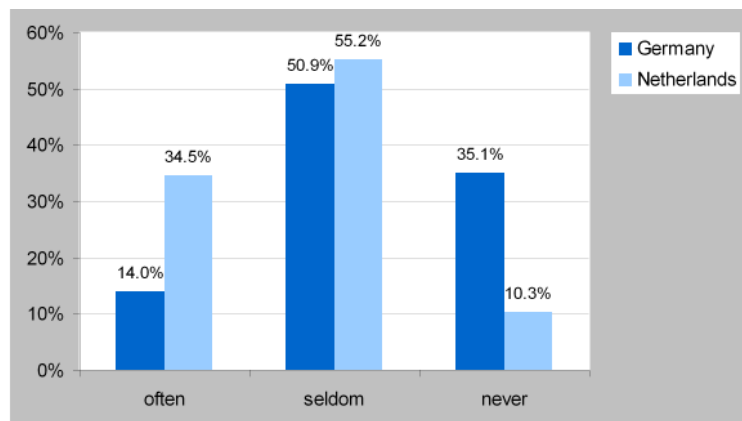


Source: Cedefop.

Similar discrepancies are observed concerning the use of group discussions as a teaching method. The students were asked how often group discussions are carried out with the teacher playing only the role of a moderator or advisor. This

is reported to be more frequent in the Netherlands than in Germany. The same tendency appears concerning the opportunity for students to answer open questions, inviting them to formulate their own ideas and opinions: 75.8% of the Dutch students experience this kind of questions always or often, compared to 66.6% of the German students.

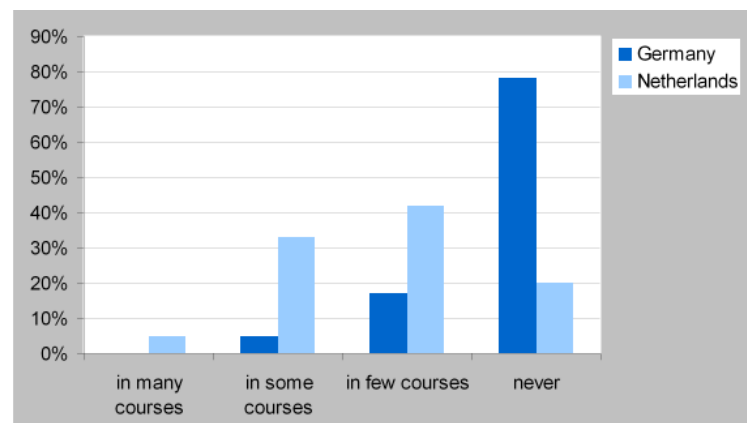
Figure 17. **How often do lectures in vocational courses look like ‘the students have a discussion, the teacher is the moderator/advisor’?**



Source: Cedefop.

Even more striking is the difference in the use of role-playing games. In the German class this method seems to be widely ignored (78.6% never experienced such method) while in Dutch classes this method is used in some (34.5%) or few courses (41.4%).

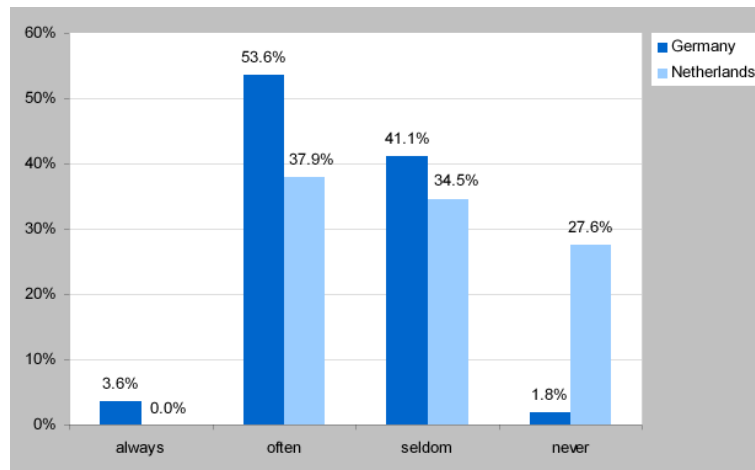
Figure 18. **In how many courses do you have role-playing games?**



Source: Cedefop.

The survey indicates that the link established by teachers between work-based and school-based learning is stronger in Germany; 57.2% report that experiences from the workplace are always or often discussed in class, compared to 37.9% in the Netherlands. In the latter, 27.6% of the students say that this never happens, compared to 1.8% in Germany.

Figure 19. **How often are your experiences from workplace training discussed in class?**



Source: Cedefop.

When asked how helpful the different teaching methods were for their learning, the students rated lectures as the second most helpful (72.9% find that with lectures they learn very well or rather well), after computer-based learning (76.6%). Research assignments were third (63.6%) followed by projects (52.5%), case studies (51.9%) and role-playing games (46.4%). No direct correlation could be observed between these results and the question of how much the students enjoyed each of these methods: only 36.9% of the respondents enjoy lectures, compared to 86.7% who enjoy computer-based learning. Role-playing games, which are considered the least effective learning method by the students, are nevertheless considered by half of them as an activity which they enjoy (compared to 36.5% for the case studies and 38.7% for the projects).

The student survey shows that active learning methods are used indeed in both countries, confirming the hypothesis of a shift from teacher-centred to learner-centred teaching, but changes are not as radical in the two countries. This is also confirmed by the teacher interviews: in Germany in particular they do not adapt learning programmes to individual needs to the same extent as their counterparts in the Netherlands.

In both countries, teachers say that a shift to active learning methods is taking place. In the German school, group work, pair work, brainstorming and mind mapping methods are mentioned besides the traditional frontal instruction. The Dutch teacher estimates the proportion of active learning methods at about 80%, among which are discussions, brainstorming, group work, project work, work assignments and excursions. According to the Dutch teacher, the aim is to design lessons as interactive, varied and modern as possible:

'In former times, instruction dominated, today we are discussing individual learning achievements. The group receives learning tasks, must elect a group leader, the work-style is very much interactive, with Internet and Digiboard. We try to keep the classroom as diverse and as timely as possible. Today's students learn differently and have such different expectations' (Speer, interview 10 July 2009).

In both countries, the national curriculum (*Rahmenlehrplan* in Germany and *kwalificatiedossier* in the Netherlands) is an essential basis for devising learning programmes. Dutch teachers also refer to the results of the entry assessment of each learner as an essential element for planning. At the ROC Rijn IJssel, each learner undergoes a test identifying his or her competences when beginning a course. Theory and practices are no longer taught separately, but combined. The training starts with a *nulmeting* (also called QuickScan), a test to determine the level of knowledge and competence of the trainee. The results of this *nulmeting* form the basis for a personal development plan (*Persoonlijk Ontwikkelingsplan*; POP). This plan describes individual training objectives and the means to achieve them. The POP in turn forms the basis for the personal activity plan (*Persoonlijk Activiteiten*, PAP), which describes in detail the learning activities to achieve the training objective. Such a PAP may include different kinds of activities, such as work-based training periods or the implementation of practical project work (workplace learning becomes a 'learning station'). Thus, competences already acquired by the learners in past experiences are recognised and taken into account for further training. Certified professional experience can be recognised as equivalent to a training module. The certificate, a so-called *bewijsstuk* (document), is attached to a portfolio, accompanying the learners throughout their training and which is also used by teachers to plan the learning process.

The Dutch pupils are thus involved from the beginning in the planning of their training pathway. *For the teaching practice, this means that we care as a lecturer for a group of trainees who are all busy with different things. The art of teaching is to get this all consolidated* (interview with Dutch teacher). The challenges

implied by this learner-centred approach are further described by the teacher in relation to planning activities:

‘It is difficult to make a solid content planning for the group with training beginners for the whole year, because everything starts with the POPs and the PAPs. The planning of lessons has changed. In former times you could prepare a teaching unit as an instructor and then reuse your plans each year. Now, with the competence-based education, you cannot do like that anymore, because of different demands in all lessons and for every single student. Today, when planning the contents, you have to combine many things together which were formerly taught separately’ (Spoor, interview 10 July 2009).

The time and effort per student has increased greatly. Nevertheless, in the view of the teacher interviewed, competence-based education is ‘a very good development’.

These two different approaches, the individual approach in the Dutch school and the collective approach in the German school, are associated to different perceptions of the teacher’s role and the challenges he has to meet. Whereas German teachers consider the different starting levels of the pupils as a challenge which hinders the (collective) learning and teaching process, the Dutch teacher takes these different levels into consideration and plans individual learning pathways for each student. It is relevant that the interview partners quoted that they have to teach in classes with sizes of about 30 students and more. All consider such class sizes too big to guide and teach each learner in the best way:

‘Concretely, the teacher has to ask: how can you get the maximum out of the classroom for individual students? Or: how do I make the lessons so that someone does not learn the same thing twice? The problem is that we are dealing with trainee groups of 30 students or more who have all their individual output levels, and, based on this, their POP and PAP. One such group is really too big to guide each person individually and optimally’ (Spoor, interview 10 July 2009).

Teachers’ opinions also differ in the two countries concerning the overall influence of the new competence-based curricula on the learning process. German teachers believe that the new curricula do not have a positive influence on learning processes. In their opinion, the structuring of curricula following learning areas reflecting work processes is not acknowledged by the students, who still have difficulties in relating theoretical knowledge taught at school and work practice. In addition, there are organisational problems in schedules and the division of work between teachers, as well as in progression between courses. All the teachers at the German school stated that they would prefer to go back to the

'old-fashioned curricula', based on subjects as they were before the last reform. According to them, feedback from the trainers in companies concerning the new school-based curriculum is negative, teaching in learning areas being felt to convey too little theoretical knowledge and understanding.

On the other side, one Dutch teacher indicates that the competence based curriculum is more attractive to students and also more interesting for teachers due to their new role: *teachers don't only teach but also look at how a person can develop and what he has to learn* (Spoor, interview 10 July 2009). The learner is no longer a passive listener; he has become a 'doer' in the learning process. Thus the freedom to design the learning process according to own preferences has grown on both sides, for the teacher and for the learner: *The match between the individual learning needs and the curriculum is better than in the old system. And finally, we have both as a lecturer and as an apprentice much more freedom to design the teaching and learning according to own wishes* (Spoor, interview 10 July 2009).

These findings illustrate the progressive shift from teacher-centred to learner-centred approaches, but they also call for more research in curriculum delivery by revealing how practices and understandings might differ even when the conceptual bases of competence-based education underpinning curricula are quite similar in the countries examined (see 3.1.1). However, these results of the study visits must be used carefully as they are far from being representative in terms of sample. Further, the pedagogic freedom granted to teachers and the level of decision-making of training providers allow for a certain degree of diversity even within one country.

3.4.2. Curriculum reforms and teaching materials

Teaching materials, such as textbooks, are a key tool for introducing and reinforcing national core curricula and unified national standards and assessment. They continue to be the predominant learning resource in most European countries, despite the advent of instructional technology and substantial resources devoted to the provision of computers in schools. Recent research (Psifidou, 2007) has shown a correlation between the impact of curriculum reform and the learning materials used in learning environments. Therefore, the didactical approach underpinning textbooks and other teaching materials, their content and structure is highly relevant to measuring the effects of outcome-oriented curriculum reforms on teaching practices.

It is only in Poland, Romania and Slovenia that textbooks have to be approved by the State. In the remaining study countries, publishers are free to develop new textbooks and teachers and schools can select these according to

their needs and those of their students. This open market creates favourable conditions for competition between different textbook publishers and ensures their immediate reaction in adapting textbooks to curriculum change. The new curricula for secondary schools in Poland will be put in place in 2012, but the publishers have already started to prepare new textbooks. It is worth noting that teachers are deeply involved in developing textbooks; in some countries this is even the most important channel for them to influence the implementation of curricula.

In Romania, textbooks based on the new modular curricula have been developed and approved by the Ministry of Education and Research. In public schools at pre-university level, only approved textbooks are allowed, but the teachers have the right to select the textbook most appropriate to training needs. Approval is granted only if the authors of the textbook are qualified (they must have teaching experience and be assessed following national procedures) and if the textbook meets quality standards ensuring that it is adapted to the curriculum. The National Centre for Curriculum and Assessment in Pre-university Education (curriculum and textbooks department) organises, coordinates, and monitors the process of textbook project evaluation. Assessment of textbook projects is done by teachers after attending an instruction module for textbook evaluation. Evaluation is based on a set of national criteria, divided into those for eligibility and general criteria for quality. The following steps must be taken (Ciobanu, interview 18 May 2009):

- (a) needs analysis based on the feedback of the curriculum experts;
- (b) training in writing textbooks, if needed, following given methodologies;
- (c) developing peer evaluation and assessments sheets;
- (d) going through a process of evaluations (self-evaluation, evaluation conducted by coordinators, evaluation conducted by curriculum experts, evaluation conducted by teaching/learning expert).

In Slovenia, the Council of Experts on Vocational and Technical Education (Strokovni svet Republike Slovenije za poklicno in strokovno izobraževanje) is responsible for examining proposals for new textbooks made by the authors or publishers. If approved by the council, textbooks get the status of recommended teaching material (Mlakar, 2007). The School Inspectorate ensure that accredited textbooks are used (Zgaga et al., 2006). In the framework of recent curriculum reforms, funds from the European Social Fund were used to help finance the development of VET learning material. The learning materials produced range from traditional textbooks, manuals (e.g. project work, understanding enterprises' way of life), worksheets and e-material to educational films. The National Institute for Vocational Education and Training (CPI, 2007, p. 47) states: *It could be*

expected that the production of learning material will represent an important activity in further development of VET programmes, with desired broadly based material adapting to training needs in different circumstances. Traditional textbooks will increasingly be supplemented with more flexible learning material in electronic form (CPI, 2007).

For the logistics curriculum *logistični tehnik*, textbooks and teaching materials are still being reviewed and adapted by working groups composed mainly of teachers. As the curriculum was only introduced in 2008, teachers sometimes also use textbooks originally intended for other, similar logistics programmes, but which are already approved by the Ministry. Although they have to choose from a list of recommended textbooks, teachers interviewed in the case study do not see this as a constraint. Teachers themselves participate in writing and updating of such textbooks. They are also encouraged to use information and communication technologies as well as other means to introduce new developments to their students and adapt the learning process (Prasnikar and Sedmak, interview 22 September 2009; Krajnc and Rebevšek, interview 4 November 2009).

While revising textbooks is not included in curriculum reform policies and initiatives, the introduction of competence-based approaches in curricula has, nevertheless, had an influence on the content and didactical approach of teaching materials, as seen in France. Although there is no comprehensive evaluation of textbooks available at the moment, academic debates and handbooks on writing textbooks allow us to identify the main elements of change (Gerard, 2003):

- (a) situations/problems are defined to help learners relate knowledge to familiar contexts;
- (b) a wide range of different materials and information types (texts, graphs, images etc.) are proposed to students to select the information needed to solve problems;
- (c) complex activities are proposed for learners to solve problems and tasks which are meaningful and produce useful results;
- (d) group activities are proposed to encourage social interaction;
- (e) textbooks invite learners to reflect their own learning and identify the resources and factors which were helpful in solving a problem;
- (f) information is synthesised and links are established between different themes, contexts or even disciplines to aid integration of different kinds of knowledge and transfer of knowledge and skills to new situations and contexts;

- (g) textbooks aim at making knowledge and skills meaningful to learners by relating them to professional, social or personal contexts in which the learner might use these knowledge and skills.

These elements are directly related to the understanding of competence underlying the reforms of curricula in France, and the four core features of competences:

- (a) transversality;
- (b) contextualisation/decontextualisation;
- (c) complexity;
- (d) integration.

The new textbook structure follows inductive reasoning, starting from the learner's experience and concrete problems, then progressing to more general and abstract knowledge, whereas textbooks used to follow a deductive logic starting with theoretical knowledge which was then broken down and applied to more concrete problems (Gérard and Roegiers, 2003, p.73):

Table 9. Deductive vs. inductive textbook structure

Deductive textbook structure focusing on instruction	Inductive textbook structure focusing on active learning
<ol style="list-style-type: none"> 1. Presentation of theoretical knowledge 2. Questions to evaluate the understanding of the theoretical knowledge 3. Exercises to apply the theoretical knowledge 	<ol style="list-style-type: none"> 1. A 'remembering' section on what the learner is already supposed to know on the subject 2. Exploratory activity (the learner is asked to carry out limited research or to discover something new to him/her) 3. Applying exercises: activities to apply the new knowledge 4. Synthesis activity or summary

Source: Gérard and Roegiers, 2003, p. 73.

In Germany, the curriculum reform in IVET also had an impact on textbooks. In the new logistics textbooks for vocational schools, knowledge and understanding is linked to typical situations in the work context. These exercises, which simulate real occupational situations and problems, are supposed to help the learner apply his new knowledge to complex problems. However, according to Schalek (2007) and Engelhardt (2008), there are not yet enough such textbooks on the market which could help teachers with the competence-based-approach based on learning areas. This is also confirmed for logistics by the teachers interviewed. This is of great concern, as Tramm and Goldbach (2005) demonstrated that textbooks are still the most important source of information used by teachers to plan learning processes in vocational schools, although the

Internet and special websites and web platforms for sharing materials and exchange of teaching practices are increasingly used as well.

In the Netherlands, the teacher interviewed in the study visit mentioned textbooks as one of the most important tools for planning the learning process. Textbooks in logistics are published according to the core tasks (*kerntaken*) of the curriculum. Very often, these textbooks take the form of a collection of loose worksheets. This collection can be easily augmented to take into account new developments in logistics. The Internet is also increasingly used, especially in the context of self-directed learning processes.

Summarising the findings of the country studies, it seems that competence-based approaches have also had an impact on textbook content and organisation and other teaching materials. The textbooks examined in the logistics case study are written to establish a closer link between practical skills and theoretical knowledge on the one hand, and to encourage active learning processes on the other, reflecting the same tendencies observed in teaching practices. The Internet, as an increasingly important source of information, is introducing a new degree of flexibility and responsiveness in the system. However, the evidence collected in this study is not sufficient to provide any definitive answer to the question of whether teaching materials are fully adapted to support learner-centred teaching in all parts of the VET system. Further analytical work in this respect, which falls out the scope of this study, is needed.

3.4.3. Curriculum reforms and assessment methods

Curriculum reform demands the alignment of learner assessment systems and mechanisms. Assessment practices can exert powerful influence on teaching, on the taught curriculum and on education and training institutions ethos and organisation. There is an inevitable tendency to devalue any learning aims (or learning outcomes) which are difficult to assess by the means currently available. As the way curriculum is being taught interacts with assessment practices, curriculum reforms should not be seen in isolation from assessment policies.

The shift to learning outcomes in VET has several implications for learner assessment methods. Validation of non-formal and informal learning has raised the question of the validity of assessment methods, which is also high on the agenda in formal education, given the new focus on integrating skills and knowledge and the transferability of competence from the educational to a professional context. However, active learning methods and learner-centred approaches highlight the importance of formative assessment. These two aspects – validity and the formative character of assessment methods – were found to attract increasing attention in the wake of the curriculum reforms in the

study countries. Although there is sometimes a long way from theory to practice, a range of developments can be seen in the VET segments of the case studies.

An important goal of the introduction of learning outcomes in curricula and of new methods of teaching and learning is to develop the ability of the learner to transfer knowledge and skills acquired in an educational context to an occupational context. This requires changes in assessment forms, for instance by increasing the weight of practical examinations and assessment at the workplace. As well as reliability and objectivity, assessment methods have to be valid in the sense that they indeed describe and evaluate the professional skills, competence, etc. which are intended to be tested (Reetz and Hewlett, 2008, p. 57).

The nine countries under examination reveal a tendency to adopt new assessment methods as close as possible to professional contexts. Evaluation in the course of the study programme (*évaluation en cours de formation*) in France is particularly interesting in relation to outcome-based approaches. It was introduced in VET in 1990/92; a decree defined the main principles of use in 1997 and several evaluations have been carried out since then to improve the regulatory framework and the training of teachers and trainers (Billet, Cahuzac and Perrin, 2002). This form of assessment aims at validating learning outcomes (units of competences) in the course of training, when learners are felt to be ready for it, and is part of the certification process leading to the award of a qualification. Assessment situations are chosen to be as close as possible to 'real' work situations to ensure that competences observed are transferable to the professional context. They are conceived using qualification standards, and structured around professional tasks identified in occupational standards. The case study on logistics revealed that the regional educational services (*académies*) suggest a large amount of support material for teachers and tutors in companies, as well as specific training, to organise this form of assessment. Descriptions of real or simulated work situations (e.g. role playing games) are proposed along with evaluation grids on the website of the Académie Orléans-Tours dedicated to VET in logistics ⁽²⁸⁾. For final assessment, which is organised once a year at national level (the same assessment tasks for the whole country) for learners enrolled in apprenticeship and school programmes, learning outcomes are assessed through a written examination of four and a half hours. The examination takes the form of case studies. A work situation is described and the learner is provided with documents to answer to a set of open questions. In the course of the year, teachers are free to use numerous assessment

⁽²⁸⁾ <http://logistique-et-transport.tice.ac-orleans-tours.fr/php5/?lang=fr> [cited 26.11.2009].

methods for formative assessment, such as multiple choice questionnaires, case studies and others (see in Annex 1 an extract from a final assessment task of the unit 'organising and managing logistics activities', *Baccalauréat professionnel Logistique* from the year 2006).

In Dutch VET, competences are seen as an integration of knowledge, skills and attitudes (see Section 3.1). One is only competent under the condition of an integrated performance based on (acquired) knowledge, skills and attitudes. The impact of this definition is that knowledge, skills and attitudes are never assessed separately, as it is only the ability to integrate these three elements which turns somebody into a competent person:

'Competences will only get a significant meaning within concrete operational contexts and will only be clear in visual behaviour in terms of the working processes and results in an occupational context. [...] Competences are the ability to successfully meet complex demands in a particular context through the mobilisation of psychosocial prerequisites (including both cognitive and non-cognitive aspects). This definition supposes that a person is competent only under the condition of being able to integrate relevant knowledge, skills and behaviour (from a wider repertoire of knowledge, skills and behaviour) the situation calls for. Competence is not defined by the mere possession of certain knowledge, skills and behaviour as such, but by the ability to make an appropriate choice from one's repertoire and the ability to amalgamate knowledge, skills and behaviour in a specific situation' (Westerhuis, 2007, p. 11).

Written examinations are used to assess theoretical knowledge. They are developed by the centres of expertise on VET and the labour market (Kenniscentrum Beroepsonderwijs Bedrijfsleven, KBB). Different methods of work simulation and work-based assessment are used for the *proeven van bekwaamheid* (aptitude test). Feedback discussions with teachers following a semi-structured questionnaire are mentioned as an important assessment method by the Dutch teacher interviewed in the study visit. Feedback discussions are used for summative as well as for formative purposes.

In Germany, the assessment methods in VET have been criticised for several years by researchers for not meeting validity criteria. Therefore, new methods have been developed and tested in pilot projects in relation to the concept of vocational competence (Breuer, 2005; Ebbinghaus, 2005). They mainly focus on the simulation of typical work situations, with a particular emphasis on integrated assessment (*integrierte Prüfung*), complex tasks (*komplexe Aufgabe*) and complex problem (*Komplexes Problem*). To consider the real work situation, assessments methods called planning discussion (*Planungsgespräch*), counselling the client (*Kundenberatungsgespräch*), practical

task (*praktische Aufgabe*) and work-based project (*betriebliche Projektarbeit*) were developed and implemented (Ebbinghaus, 2005).

As a general principle, assessment tasks based on the concept of vocational competence should address all three aspects of the work process: planning, execution and evaluation. But this principle is not yet fully acknowledged in practice, partly because the examination system is very much decentralised. Final examinations based on the standards laid down in the training ordinance are developed and implemented by the local chambers of trade and industry).

Difficulties in changing assessment practices are illustrated in logistics by the results of a research project undertaken in 2008 at the University of Magdeburg by the Department of Vocational Education and Human Resource Development (Schmidt, 2008). The project examined logistics final assessment practices at the Chamber of Trade and Industry in Magdeburg. Assessment is conducted by an audit committee, which consists of VET teachers, representatives of employers and employees. Interviews with members from this committee and a comparative analysis of examination tasks, before and after the adoption of the new curriculum, revealed that traditional types of tasks have been retained for most of the examination. The aspects of planning and performing have been increasingly addressed by the different assessment tasks, but the evaluation aspect was found to be still very much neglected, and few tasks addressed all three aspects together. In some subjects (e.g. economics), no real changes were noted: multiple choice tests were found to play an important role, while the questions were not related to real work situations. This was mainly due to the difficulty in finding direct links between the contents of that subject in the school-based curriculum and the working situation, according to interviewees. Overall, the research led to the conclusion that assessment practices were increasingly meeting the validity criterion, but that there was room for improvement.

In the further education sector in Ireland, assessment reforms have focused on quality assurance of the assessment and validation process rather than methods. This relates to a general policy of granting more autonomy to training providers, including for the choice of appropriate assessment methods. The Further Education and Training Award Council (FETAC) recognises six categories of assessment methods: assignments, projects, portfolios, skills demonstration, examinations and learner record.

In compulsory education, the introduction of the Leaving certificate applied (LCA) gave way to a new form of assessment aiming at better capturing learning outcomes while displaying a formative character, the 'student tasks'. The student task is

'a practical activity and/or process of reflection through which the student integrates and applies learning experiences gained from undertaking the Leaving certificate applied programme to some or all of the following:

- the development of a product,
- the investigation of an issue,
- the performance of an action,
- the provision of a service,
- the staging of an event,
- personal reflection' (NCCA, 2001, p. 27).

These tasks must be performed during the two-year programme of the LCA and represent 35% of the credits for the qualification award. The aim of student tasks is to help the learner integrate skills, knowledge and experiences acquired in different courses, and to develop certain key competences such as group working, initiative, etc. They have a cross-disciplinary character.

In Slovenia, assessment tasks and tests are prepared by teachers based on minimum standards defined in the curriculum. Different methods of individual and collective assessment are used, such as oral tests, assignment, practical assessment in form of products or services, performance, defence, project work. In case of education and training in companies, the tutor at the workplace has to observe the learning process and inform the school about the learner's performance (Eurydice, 2008a). In the curriculum for *logistični tehnik* it is prescribed that each vocational module has to be evaluated by practical assessment, which can be a product or a service. Finally, the learner has to pass the vocational Matura which includes a mandatory written and oral exam in Slovene and a written and oral examination in logistics; there is also an elective part consisting of a written and oral examination in a foreign language or mathematics and a practical vocational exam (product or service). The teachers interviewed in the case study reported that assessment methods have changed to measure learning outcomes better (Prasnikar and Sedmak, interview 22 September 2009).

In Romanian vocational educational programmes each competence unit has to be assessed by a practical test, through which the student has to prove that he is able to prepare, to process and finally to check his work (e.g. a task, a product or a service). Successful completion of these assessments is a prerequisite for admission to the final exam for the award of the qualification (Stroie, 2009). The composition of the final exams differs according to the qualification level and the complexity of the target competence. Romania has an eight-level qualification framework where levels one to five are dedicated to vocational qualifications. Qualifications at level one (technical high school lower cycle) are assessed by a series of practical tasks. For level two qualifications (technical high school upper

cycle, one year) the final exam includes an oral presentation of a project and a practical demonstration. The student has to develop the project during the year, with monitoring and support from teachers. The same assessment methods are used at level three (technical high school upper cycle, two years) but the projects have to be more complex (Cedefop and ReferNet, 2009b).

Finally, in the UK-Scotland the shift to competence-based education introduced by the Curriculum for excellence has especially led to changes concerning the formative character of assessment. Assessment is for learning (AifL) provides a framework for assessment in compulsory education closely linked to Curriculum for excellence and clearly related to outcome-based approaches. AifL is based on the work of Paul Black and Dylan Wiliam (Inside the black box, London: King's College, 1998) on formative assessment. It focuses on sharing learning outcomes with pupils, using dialogue within the classroom promoting thinking, ensuring constructive feedback on pupils to improve future learning, and equipping learners with the skills and understanding to engage in peer- and self-assessment (Bryce and Humes, 2008, p. 432). Within this programme, tools, advice and case studies are provided to teachers and schools to use assessment in three main directions:

- (a) assessment for learning: using assessment to support classroom learning and teaching;
- (b) assessment as learning: using assessment to promote autonomy in learning;
- (c) assessment of learning: using assessment evidence to make sound judgements about learning and school effectiveness.

In compulsory and further education, assessment methods are a combination of written assignments, verbal or oral responses, demonstrations, presentations and portfolios (May Sweeney, interview 29 April 2009).

Assessment methods have been attracting considerable attention in some countries in direct relation to debates on competence-based and outcome-oriented curricula (e.g. in Germany, France and the UK-Scotland). Reforms prioritise making assessment methods more valid for judging the ability of learners to be competent in a work situation. Germany and Romania have adopted the same distinction of three aspects (planning, performing, checking/evaluating) to develop assessment tasks addressing all the dimensions of vocational competence. In other countries, this trend is primarily expressed by the increasing use of practical tests (e.g. in France and Slovenia). A second trend in recent reforms is the increasing attention paid to formative assessment in the context of learner-centred approaches and active learning, as in the Netherlands, Romania, Slovenia and the UK-Scotland (see Section 3.4.2). A third trend is the tendency to organise assessment in a progressive and more flexible way rather

than at once, as shown by the analysis of VET laws in a range of countries (e.g. in Germany in those cases where stretched-out examinations are implemented).

While these findings could demonstrate that the shift to outcome-based approaches has had some effects on assessment methods and policies, the evidence for changes in practices is still scarce. The example of the logistics examinations in Germany shows that only a very detailed analysis of assessment tasks in relation with the understanding of competence underpinning the curriculum can lead to a real understanding of the implications and consequences of the shift to learning outcomes in VET curricula. In addition, the validity of assessment methods should be examined also in the context of other criteria such as reliability and 'social legitimacy' (Bjørnåvold, 1997, p. 86) of assessment, i.e. the questions of costs and acceptance (Frommberger and Milolaza, 2010).

4. Outcome-orientation in curricula: comparing VET, general and higher education

Although focusing on VET, the study also aimed at identifying similarities and differences between VET and general and higher education in the relationship between learning outcomes and curricula. This issue is not meant to be addressed exhaustively but to provide some preliminary findings based on the country studies which take into account some aspects of general and higher education.

4.1. VET as an avant-garde of outcome-oriented curricula

In most countries VET seems to play an *avant-garde* role with respect to the introduction of learning outcomes in curricula. This is so in France, where the concept of competence had been originally developed in human resource management and in continuing education before being introduced in initial VET in the 1980s and serving as a basis for the creation of the *Baccalauréat professionnel*. It was only in the 1990s that curriculum reforms based on competence-approaches were initiated in general education as well, resulting in the adoption of the common base of competences and the revision of curricula which is still underway. Other examples of such a time lag can also be found in Ireland – where the introduction of the outcome-oriented Leaving certificate applied preceded the reform of the curricula for the established Leaving certificate – in Germany or in the UK.

Following Cedefop (2009b, p. 67),

‘a shift is occurring across national education and training systems. Until recently, the predominant focus on learning outcomes was VET driven; now the learning outcomes approach is increasingly being introduced into general education systems, particularly in basic or compulsory schooling. The only subsector of education systems which appears to remain largely input-driven is upper secondary general education leading to the diploma that completes secondary general education.’

This diagnosis, which seems to be true when comparing the calendar of curricular reforms in the countries examined in this study, must be nuanced with regard to the debates on competence-based teaching and learning practices which have been preparing the grounds for reforms in some countries such as Germany, Ireland and France (see Section 3.5.2).

Several factors influence the different changing paths of education subsystems. The two most commonly mentioned rationales for introducing learning outcomes in curricula, namely the closer link between employment requirements and training provision and the need to implement EU tools such as the EQF, are less powerful in the case of general education. First, the goal of preparing learners for an immediate transition to the labour market is ascribed to VET, more than to general education programmes which tend to lead to further studies. Second, EU policies emphasising learning outcomes have focused more on VET and higher education than on general education. However, important European policy developments endorsed with the Recommendation of the European Parliament and of the Council on key competences for lifelong learning (2006) ⁽²⁹⁾ – defining eight key competences that all young people should develop at the end of their initial education to a level that equips them for further learning and working throughout their life – have also become important drivers for curriculum reforms in compulsory schooling (Leney et al., 2009).

The 2010 joint progress report of the Council on the implementation of the Education and training 2010 work programme (Council of the EU, 2010) recognises that many European countries are reforming curricula based explicitly on the key competences framework. The conclusions, however, point out that there is still much to be done to update assessment methods, to support teacher competence development, and to introduce new ways of organising learning in an innovative school environment.

4.2. Learning outcomes in general education curricula

In its communication *Improving competences for the 21st century: an agenda for European cooperation on schools*, the European Commission stresses the need

⁽²⁹⁾ The eight key competences as defined in the European framework are: (1) Communication in the mother tongue; (2) Communication in foreign languages; (3) Mathematical competence and basic competences in science and technology; (4) Digital competence; (5) Learning to learn; (6) Social and civic competences; (7) Sense of initiative and entrepreneurship; (8) Cultural awareness and expression (European Commission, 2006).

to focus general education on developing key competences; this follows the European framework for key competences for lifelong learning, released at the end of 2006. It states that *Curricular reform to improve competences needs a holistic approach, organising learning within and across subjects, teaching competences explicitly, new teacher training and didactic approaches and, vitally, involving teachers, learners and other actors fully* (European Commission, 2008, p. 5). In this context, the use of learning outcomes is recommended as a means of making assessment more learner-centred: *Improving competences implies a more extensive use of formative assessment to identify and address problems early, and the development of more sophisticated techniques of summative assessment based on agreed standards for learning outcomes* (European Commission, 2008, p. 7).

The UK-Scotland offers a good example of curriculum reforms addressing the first challenge mentioned in the Communication by referring to a holistic understanding of competence in its Curriculum for excellence, which addresses learning from age 3 to 18 including vocational and general education. The Curriculum defines 'experiences and outcomes' for the different learning stages and curriculum areas in line with the values and overarching goals of education. An outcome represents 'what is to be achieved', whereas 'experience' acknowledges 'the importance of the quality and nature of the learning experience in developing attributes and capabilities and in achieving active engagement, motivation and depth of learning'. *Taken as a whole, the experiences and outcomes embody the attributes and capabilities of the four capacities* ⁽³⁰⁾. The four capacities are those associated with the roles of responsible citizen, successful learners, effective contributors and confident individuals.

The outcomes in the Curriculum for excellence apply to the totality of experiences planned for children and young people, including the ethos and life of the school and interdisciplinary studies, as well as learning within curriculum areas and subjects. They are formulated in a holistic way, not as performance criteria but rather as guiding principles in defining learning programmes. The curriculum highlights the connections between experiences and outcomes, teaching and assessment methods, and organisational aspects of learning programmes (a progression adapted to the needs of learners, cooperation between different learning places, etc.).

⁽³⁰⁾ <http://www.ltscotland.org.uk/curriculumforexcellence/experiencesandoutcomes/gettingstarted/introduction.asp>
[cited 29.11.2009].

In France, the introduction of a competence-based approach in general education can be traced back to the adoption of the *Charte des Programmes* (1992). This strategic document sets the basis for a new approach focusing on competences, on evaluation and on the idea of a 'contract' between different stakeholders involved in the teaching/learning process (Ropé and Tanguy, 1995):

'The program [syllabus] should not be a stock of knowledge incompatible, because of its volume, with the faculties of the learner. It must, for each level, identify a list of competences implying the acquisition of corresponding knowledge and know-how, taking into account the assimilation capacities of learners and feasibility criteria. [...] The program defines explicitly the final competences expected at the end of the year, of the study cycle or of the training, as well as associated evaluation modalities' (*Charte des programmes*, p. 2).

Since 2005, the definition of a common base of competences (key competences) has led to the introduction of learning outcomes for all subjects, although they operate differently from one subject to the other: some subjects use categorisation in knowledge, skills and attitudes, whereas others distinguish between competences and associated knowledge.

Curriculum reforms in Ireland, France or UK-Scotland have focused primarily on a new way of teaching and learning implied by competence-based approaches. In contrast, debates in Germany focus on standards of learning outcomes for summative assessment and performance benchmarking of learners, teachers and schools in a quality assurance perspective (Klieme, 2003). Standards (*Bildungsstandards*) have been developed based on the main disciplines taught at school (language, maths, science, etc.).

The simultaneous calls for a holistic approach to competence-based curricula and the use of learning outcomes in the context of quality assurance and benchmarking raise a conceptual issue: referencing learning outcomes to situations or contexts against academic knowledge and disciplinary traditions. How can competences be standardised and assessed? This crucial question is further complicated by the aim of recognising informal and non-formal learning in general education as well. Whereas learning outcomes in VET clearly refer to competences in professional contexts, key competences refer to a multitude of contexts (academic, social, cultural, professional, etc.). This leads to a tension between the contextualisation of competences (i.e. the differentiation of curricula according to the needs and experiences of learners) and the need to find a commonly agreed reference for the development of standards (which implies uniform curricula) (Roegiers, 2008, p. 73).

In the most frequent definitions, learning outcomes refer to competences, which are themselves manifested in situations ⁽³¹⁾. The situated dimension of competence is clearly stated in the definition of the Qualifications Authority in Ireland: *Competence is the effective and creative demonstration and deployment of knowledge and skill in human situations. Such situations could comprise general social and civic ones, as well as specific occupational ones [...]. Competence outcomes can thus be stated in the form, 'In a specified range of circumstances, a learner will be able to ...'* ⁽³²⁾. In Slovenia, the definition of competence mentions situations as a determinant factor: in the national classification system of education and training, competence means *the ability of a person to activate, use and link the knowledge gained in complex, heterogeneous and unpredictable situations* (Klasius, 2006, p. 5). In terms of curriculum design, this should imply taking situations into account in defining learning outcomes and content specifications: this is a demanding approach which has been tested in Nigeria and in Quebec (Jonnaert et al., 2005). In those two countries, a bank of situations was based on regional focus groups (Nigeria) or a survey among the population (Quebec) to check in which ways traditionally taught disciplinary knowledge was related to real situations and to implicit knowledge used in those situations. Situations were grouped into classes and analysed to find out how a competent person would act in them. The resources required – knowledge, skills and attitudes – were then identified.

This approach to curriculum development is an exception not found in the study countries. However, the debates and consultations organised in relation with the definition of key competences or in anticipation of major curricular reforms (such as in France before the adoption of the *Charte des Programmes*, in Ireland and the UK-Scotland before the recent curriculum review) also reveal a tendency to open up the discussion about what should be learned at school to stakeholders outside the education system. This trend can be compared to the increasing involvement of social partners and industry representatives in curriculum development in VET (see Section 3.4.2). The reference to disciplinary knowledge for the definition of curricula (for instance in the German *Bildungsstandards*) is nevertheless still stronger than in VET and raises

⁽³¹⁾ A systematic analysis carried out across several disciplinary fields including didactics, sociology and ergonomics, cited in Jonnaert et al., 2006, p. 15, comes to the conclusion that 'The analysis of these results shows that *activity in situation* is considered to be of fundamental importance in a logic of competencies'. (See: http://www.ibe.unesco.org/fileadmin/user_upload/COPs/Pages_documents/Competencies/ORE_English.pdf) [cited 6.7.2010].

⁽³²⁾ NQAI Glossary http://www.nqai.ie/framework_glossary.html [cited 27.11.2009].

challenges for the definition of learning outcomes which can be compared to those identified in higher education regarding the balance between generic and disciplinary skills and knowledge. This leads to the hypothesis that, whereas we observe in VET a tendency to adopt learning outcomes to reflect the requirements of the labour market, the tendency in general education is to use learning outcomes primarily to make traditional contents more attractive and more relevant to learners.

4.3. Learning outcomes in higher education curricula

4.3.1. Current use of learning outcomes in higher education

In the framework of the Bologna process and the Lisbon strategy, new demands are being made of higher education institutions, including transparency of qualifications, quality of provision, flexible pathways and closer links with the labour market (Davies, 2007). Learning outcomes are an essential element of the alignment of qualifications and competences of VET and higher education, the accreditation of informal and non-formal learning, qualification frameworks and credit transfer systems. Nevertheless, despite the popularity of the concept, understanding and using learning outcomes in higher education in Europe is still in its infancy: *Learning outcomes have achieved an exalted status bolstered by the ubiquitous number of references to them in conferences, official documents and communiqués. This is in stark contrast to the poor level of understanding associated with them and their relatively rare practical implementation across Europe. Detailed experience of learning outcomes is in fact limited to just a few countries at both the institutional and national levels. This gap presents a significant challenge to the Bologna process and even calls into doubt the full realisation of the European Higher Education Area by 2010. This makes the need for their better understanding a priority* (Adam, 2004, p. 3).

In an overview of learning outcomes in 31 European countries, Adam's conclusions are supported: *Information on the exact state of implementation of learning outcomes across the 46 Bologna countries is patchy and unreliable, as national reports on the subject vary in precision and quality. The systems which have developed the most mechanisms associated with this approach are found in Scotland and Ireland. These are the first two countries to have undertaken successfully the Bologna self-certification process through which their national qualifications frameworks were articulated against the overarching framework of the qualifications of the EHEA. [...] In addition to Scotland and Ireland, also England, Wales and Northern Ireland have extensively and for many years*

pioneered the higher education use of learning outcomes. Belgium, Croatia, Denmark, Estonia, Hungary, Italy, Moldova, Portugal, Romania, Spain and Sweden are moving at various speeds towards more comprehensive implementation of learning outcomes (Cedefop, 2009b, p. 81-82).

A survey carried out on behalf of the European Commission in five areas of study in higher education institutions in 32 European countries reveals, however, that the use of learning outcomes in curricula is progressing: *38% of the respondents indicate that curricula in their fields of study are fully defined in terms of competences and/or learning outcomes, 59% indicate that this is the case for part of the programmes in their fields of study, only 3% indicate that this is not at all the case. Of those not answering "fully", 49% think that change will occur in the coming 18 months. A smaller percentage (12%) indicates that change is not expected. Overall, 7% of the respondents answered that curricula are not defined in terms of competences and/or learning outcomes and do not think that change will occur at all (Enders and File, 2008, p. 19).* These results must however be taken cautiously, as the authors of the report note that situations vary hugely between universities and even between different disciplines and programmes within the countries and within same universities. In addition, *in some contexts competencies are understood as key skills or transferable and generic competencies which have to be added to the curriculum, yet in others the entire curricula are redefined in terms of competencies (Enders and File, 2008, p. 6).*

Three main issues can be identified in the debates on the implementation of learning outcomes in higher education curricula:

- (a) the balance between generic and subject-related competences;
- (b) the use and operation of learning outcomes in curricula and programmes;
- (c) the consequences of learning outcomes for the adoption of new approaches to student-centred teaching.

4.3.2. The balance between generic and subject-related competences

The process of describing outcomes in higher education curricula almost inevitably raises the questions of the purpose of higher education (Otter, 1995). This in turn leads to the question of who is entitled to decide on what is to be taught (Perrenoud, 1993).

Wildt (2003, p. 15) distinguishes between three possible functions of higher education with regard to its relationship with the labour market and society: 'adaptive', enabling students to adapt their competences to changing conditions on the labour market and society; 'adaptable', enabling students to adapt their work conditions to their competences; and 'transformative', enabling students to

participate in social and organisational change. The definition of learning outcomes depends on the function of the course of study. Schimank (2009) analyses the debate between the 'reformers' (supporters of the Bologna process, and hence of outcome approaches in higher education) and their opponents, 'Humboldtian', as a conflict of two logics reflecting also a conflict of interest. On one side, the proponents of the Bologna reforms put forward arguments such as employability and the need to raise participation in higher education, referring to a logic of economic development and social justice to define learning outcomes including a wide range of generic skills based on work requirements. On the other side, recalling the ideas of Humboldt on the inseparability of research and teaching, opponents emphasise academic freedom and personal development and consider learning outcomes to undermine the pre-eminence of subject-based knowledge.

The UDACE project Learning outcomes and credits in higher education (1991) and the Tuning process both adopted a pragmatic way to solve conflict between diverging ideas on the purpose of higher education. Learning outcomes were defined based on the views of three groups of stakeholders: academic staff teaching courses at university, students, and employers of graduates. In the Tuning process, subject-specific learning outcomes were developed by academic experts, while generic skills were developed from extensive consultation of the three stakeholder groups. The Tuning philosophy can be summarised as follows:

'The use of learning outcomes and competences is necessary in order to make study programmes and their course units or modules student centred/output oriented. This approach requires that the key knowledge and skills that a student needs to achieve during the learning process determine the content of the study programme. Learning outcomes and competences focus on the requirements both of the discipline and of society in terms of preparing for citizenship and employability' (Gonzalez, 2008, p. 19).

This debate is largely specific to higher education, as the question of relating training provision to work requirements nowadays is not as controversial in VET. It could be assumed that it is particularly relevant at the border between VET and higher education, in vocationally-oriented higher education.

4.3.3. The use of learning outcomes in curricula

A recent controversy over the use and operation of learning outcomes in curricula featured in *The Times Higher Education* (14 February 2008). Quoting Trevor Hussey from Bucks New University, the paper warns against a misuse of learning outcomes in a bureaucratic manner, *favoured more by managers than by teachers and academic*. In Hussey and Smith (2003), the authors point to the

need to have a broad and flexible understanding of learning outcomes to avoid formulating outcomes which would constrain teaching and learning. Active learning, encouraging students to contribute and to interact, is not compatible with a tight focus on prescribed learning outcomes. Therefore, referring to Megginson (1994), the authors distinguish between intended and emergent learning outcomes, which can be categorised as follows (Hussey and Smith, 2003, p. 36):

- contiguous learning outcomes are those which are sufficiently close to the intended learning outcomes to be considered by the teacher as making a positive contribution towards their achievement;
- related learning outcomes are those which are considered to contribute to the subject matter in terms of its consolidation or extension within the area, they broaden, elaborate and increase sophistication;
- incidental learning outcomes are those which, whilst not contributing significantly to the specific subject matter, are considered by the teacher to contribute towards knowledge and experience within the field in general.'

This debate on the operation of learning outcomes can be related to their function in curricula and learning programmes. The different functions attributed to learning outcomes might be conflicting, requiring different types of operation as suggested by Hussey and Smith (precise and measurable quality standards used by the Quality Assurance Agency for Auditing, against guiding principles for teaching and learning). This is a challenge relevant to both VET and general education but it is not always explicitly addressed in guidelines and handbooks on the use of learning outcomes (Lublin, 2003; Kennedy, 2006).

4.3.4. Learning outcomes and new approaches to learner-centred teaching

The concern with specified learning outcomes, which could lead to instrumental reasoning and surface learning (Biggs, 2004; Rust et al., 2003), increases in proportion to the expectations associated with outcome approaches to the quality of learning. A quotation from Adam (2004) illustrates these expectations:

'In terms of curriculum design and development, learning outcomes are at the forefront of educational change. They represent a change in emphasis from teaching to learning typified by what is known as the adoption of a student-centred approach in contrast to traditional teacher-centred viewpoint. Student-centred learning produces a focus on the teaching-learning-assessment relationship and the fundamental links between the design, delivery and measurement of learning' (Adam, 2004, p. 3).

The move from a traditional 'instructional paradigm' with a focus on teaching and instruction to a 'learning paradigm' where students are empowered to take

responsibility for their learning was advocated in an influential paper published by Barr and Tagg in 1995, *From teaching to learning: a new paradigm for undergraduate education*.

Systematically comparing the two paradigms, the authors admit that *it will take decades to work out many of the learning paradigm's implications* (Barr and Tagg, 1995, p. 2). They notice the gap between the 'espoused theory' (Argyris et al., 2006), which include what we know about learning processes and effective learning arrangements, and the 'theory in use', which consists of the principles guiding the action of people and organisations. In other words, the knowledge and the support for new approaches to learning in higher education are there, but practices are changing rather slowly.

To meet these challenges, Maher (2004) points to the need to enhance the professionalism of teachers and to encourage creativity.

'Not all learning outcomes can (or should be) assessed and it needs to be accepted that a degree of academic judgement is inherent in both teaching and assessment. Once this is realised, academics may feel more empowered to introduce different/innovative teaching and assessment activities in a climate of mutual trust' (Maher, 2004, p. 53).

5. Further analysis and conclusions

This study was designed to explore how the shift to learning outcomes induced by European developments met with other reform drivers, such as concerns over the quality, relevance and access to national education and training, to shape curriculum reforms in nine European countries. Based on literature reviews and nine country studies, the study examined to what extent learning outcomes are used in curricula and learning programmes, how the introduction of learning outcomes affected the definition, design, organisation, planning and implementation of learning activities. From this information, the study ultimately tried to identify whether the use of learning outcomes in curricula and learning programmes can be considered as making VET systems more learner-centred.

It is possible to identify broad common trends in the nine countries examined in detail, which suggest that learning outcomes have been used to make curricula and learning programmes more learner-centred (5.1). A next step is to examine how the new outcome-based curricula have influenced teaching and learning practices, raising the question of policy implementation (5.2). From there, it is possible to address some considerations to policy-makers and practitioners (5.3) and to identify further research needs (5.4).

5.1. Outcome-oriented curricular's contribution to learner-centred systems

In all countries examined in this study, curricula are a key instrument in adapting education and training to changing requirements. Important reform activities have been taking place in recent years, characterised by the introduction of learning outcomes into curricula. However, huge differences exist in the form and function ascribed to statements of 'what learners know, understand and are able to do upon completion of a learning process' and the understanding of competence which underpins the use and operation of learning outcomes in curricula.

At first glance, two main functions are ascribed to curricula: regulatory and a didactic. In a regulatory function, curricula are instruments to ensure the same high standard of quality in training provision across a territory; learning outcomes, in this case, have to provide a sound basis for assessment and must be measurable. In a didactic function, curricula offer a framework for steering the

teaching and learning process. In this case, learning outcomes can be formulated in a broad way, including competences which are not measurable; they reflect the values and the roles to which learners are prepared through education and training.

In the countries examined in this study, the curriculum fulfils both functions, but one function can dominate in some countries. In Germany, the didactic function dominates in the dual system curriculum. The concept of vocational competence defined as an overarching goal of VET is based on the understanding of competence as a personal attribute of the subject, which has to be developed through active learning methods and a combination of work-based (practical) and school-based (theoretical) learning. In the further education sector in Ireland, the regulatory function dominates. Learning outcomes take the form of standards and the National Qualification Authority of Ireland acknowledges that only those intended learning outcomes which are measurable are regarded, whereas other learning outcomes are left out of the scope of the normative specifications constituting the curriculum. UK-Scotland is particularly interesting for deciding to develop a new curriculum in IVET with a clear focus on didactic aspects of the learning and teaching process to complement the regulatory function fulfilled by qualification standards. Standards based on narrowly defined learning outcomes are thus embedded in the framework of a curriculum which Braslavsky (2001) would probably have described as 'rich' and 'flexible': rich and flexible curricula help schools to make their own decisions on a broad range of issues, by providing minimum standards, criteria, guiding principles and examples. Learning outcomes in the Scottish Curriculum for excellence are broad, address different roles of the individual in society (the role as responsible citizen, successful learners, effective contributors and confident individuals), and explicitly refer to a set of values deemed fundamental for Scottish society.

The relative importance of the regulative and the didactic functions of learning outcomes in VET curricula link to the motives leading to the adoption of outcome-based approaches. Four kinds of motives can be identified:

- (a) didactic-pedagogic motives, to assist learning processes;
- (b) socioeconomic motives, aimed at establishing a better link between VET and work;
- (c) efficiency motives, in the context of new trends in public management;
- (d) the will to adapt the VET system to European tools, such as the EQF and ECVET, to assist mobility between countries and between levels or sectors of education and training.

These motives are found to have influenced curriculum policies and led to reforms in the countries examined here. The need to adapt curricula to European

VET tools has been especially a factor in the newer Member States – Poland, Romania and Slovenia – but also in Spain. These countries have tended directly to adopt the definition of learning outcomes proposed in the EQF. In Germany, Ireland, France, the Netherlands and the UK, the shift to learning outcomes and competences can be traced back to the 1980s and to internal requirements and specific weaknesses of national VET systems rather than to EU developments. In all countries, the need to strengthen the link between education and work requirements is a very strong goal associated with learning outcomes and has a major impact on curriculum development processes.

Against this background, several elements of the curriculum reform potentially contribute to making VET systems more learner-centred.

First, new decision processes in curriculum development contribute to enhanced autonomy for teachers and training providers which can be used to define learning programmes fitting the individual needs of learners. Learning outcomes can be used in curricula as regulatory instruments to give training providers more autonomy while ensuring a high standard of quality across the country. Used in a didactic approach, learning outcomes can serve as guiding principles to orient teaching and assessment practices. In both cases, the role of teachers in curriculum development, particularly in defining a learning programme which will meet the needs of the learner, is enhanced and responsibility highlighted. The introduction of learning outcomes in national curricula has been accompanied in a range of countries by the decision to let schools develop parts of the curriculum in their own responsibility, as in Spain, the Netherlands, Poland and Slovenia). Although this has been proved a successful strategy in the Netherlands, there are associated risks and limits, such as the use of the time allocated to school curricula for other purposes, not directly linked to the learner's needs. This has led to restrictions in school curricula in Spain. Further, granting more autonomy to teachers and schools in curriculum development requires a strategy of empowerment, to provide teachers and VET providers with the necessary resources for engaging in a high quality process of curriculum development and delivery meeting the needs of the learners.

Modularisation is a second trend which can be interpreted as a contribution to demand-driven, learner-centred VET systems, as it grants more flexibility to training providers and to learners when defining a programme of study. Most countries have introduced modularised curricula in VET, but modularisation takes very different forms depending on the country and the education sector: differences can be noted particularly between IVET and CVET. These differences are essentially in the degree of freedom regarding the combination of modules (very large in the UK-Scotland for instance, non-existent in IVET qualifications in

France), and to the value on the labour market of partial qualifications (full value in Ireland, no recognised value in Germany).

Finally, learning outcomes introduced in curricula with a pedagogic-didactic purpose also have a high potential for making systems more learner-centred. The theories on learning and teaching do not offer a simple link between the use of learning outcomes in curricula and a specific approach to learning and teaching. However, in the countries examined in this study, learning outcomes are increasingly related to a constructivist approach to learning, emphasising methods and settings in which the subject is actively involved in the learning process. In those countries where curricula explicitly address the question of teaching and learning methods (for instance in the Scottish Curriculum for excellence, in IVET in France, or in prevocational education in Ireland), active learning is promoted through project-based learning, work-based learning, and formative assessment. This approach also affects teaching materials and is reflected in support materials for teachers. Empirical research has demonstrated, however, that there might be some divergence between provisions in written curricula promoting and allowing for innovative pedagogies and the actual way that these curricula are being taught. Some of the case studies show that teacher-centred instruction is dominant in lessons (Poland) or that one of the main teaching method is the frontal method (Slovenia). The study visits confirmed that changes in teaching and assessment methods happen gradually, lectures continuing to be one of the most common methods, although active learning is increasing. The question of whether learning outcomes in curricula do realise their potential of contributing positively to making systems more learner-centred highly depends on the influence of curricula on teaching and learning processes and the factors which determine such influence.

5.2. From the written to the taught curriculum: success factors

The question of the impact that curriculum reforms can have on the teaching and learning processes can be considered from two points of view: that of implementation and that of curriculum reception (Sloane, 2003).

From the point of view of implementation, the relevant question is whether teachers and training providers develop 'good' learning programmes, translating the principles and norms of national curricula into practice without distorting them. In that perspective, curricula should be clear and precise, to ensure the same standards of quality and achievement across the country. Considering

curriculum development as a communication process, the reception perspective asks how curricula are interpreted and used by training providers and teachers to develop learning programmes meeting the needs of their students. Both perspectives are legitimate, while the reception perspective certainly becomes more interesting in the context of learner-centred approaches, which emphasise the role of teachers in curriculum development.

Empirical research conducted in France by Lantheaume (2008) concerning the implementation of new learning arrangements in vocational schools in the wake of the last curriculum reform in IVET (continuing assessment, work-based learning, interdisciplinary projects) showed the effects of interpretation processes on teaching practices. In 'translating' curriculum instructions into practice, actors tend for instance to refer to past reforms, to their own personal experiences, or to the advice of colleagues to understand curriculum changes; the curriculum documents, official information and guidance were found to influence this process of interpretation only marginally. This highlights the strong influence of local contexts and networks between teachers and other actors in the education system on curriculum implementation.

The findings from teacher interviews in the study visits also confirm the hypothesis that written curricula are only one of several sources of information used to plan learning, alongside textbooks, discussions with colleagues, tests, etc. Taking the implementation perspective, this can also be interpreted as a consequence of inadequate curricula, either in curriculum overload or, on the contrary, to lack of details. Eckert and Veneau (2000) have analysed the difference between formal curricula and pedagogical practices based on interviews with teachers in technical and vocational education in three technical-industrial study programmes in France. They found that occupational and competence standards (*référentiels d'activité professionnelle, référentiels de certification*), although originally introduced in curricula to harmonise teaching throughout the country, finally did not play an important role in planning teaching. On the contrary, according to their findings, teachers tend to rely foremost on past assessment documents to determine what is really relevant to the learner. These documents help them to select teaching contents and to concretise standards and activities which are too vaguely described in the standards.

Looking to further factors influencing the effect of curriculum reforms on teaching, the teachers interviewed in Germany, the Netherlands and Poland pointed to organisational aspects and resource constraints. In Germany, teachers mentioned structural factors hindering the implementation of an outcome-based approach focusing on learning areas instead of disciplines, confirming more representative studies on the impact of German curricular reforms (Kremer, 2003;

Huisinga, Lisop and Speier, 1999). rooms are not equipped adequately, progression between the courses focusing on learning areas is not clear, it is difficult to dispatch the learning areas between the existing team of teachers. Teachers also pointed out that the number of learners per class (between 30 and 33) makes it difficult to involve each individual learner. This last point was also mentioned during the study visit in the Netherlands as a huge challenge for learner-centred approaches. Interviews conducted in Poland pointed to the difficulties of schools in combining modular courses in vocational subjects with traditional general education courses, which are also part of the study programme in IVET, because of different timescales. Stenvall and Väyrynen (2004), as well as Lantheaume (2008) highlight the fact that organisational learning processes are slow: the introduction of cross-disciplinary courses and the development of school curricula imply new patterns of cooperation among teachers, trainers and headmasters and innovative solutions to such basic problems as timetable coordination and room distribution.

A critical factor for the success of curricular reforms is teacher and trainer training, as well as the adhesion of teachers and trainers to the principles of the reform, which demands a sense of ownership and commitment. Even where teachers and trainers are convinced of the benefits of new approaches, they might lack the capacities to act accordingly. This is pointed out by an OECD survey conducted in lower secondary education (OECD, 2009), which notes that there is a difference between teachers' beliefs concerning effective teaching and learning methods, and their practices. Although teachers are increasingly inclined to regard students as active participants in acquiring knowledge, rather than to see the teacher's main role as the transmission of information and demonstration of 'correct solutions' (especially in northern Europe, less in eastern and southern Europe), in the classroom, they put greater emphasis on ensuring that learning is well structured than on student-oriented activities which give them more autonomy. This could be due to the lack of training: the results show that *teachers who undertake professional development, undertake a wider array of teaching practices and are more likely to cooperate with other teachers. This pattern is true in every country* (OECD, 2009, p. 88).

Further research could clarify whether the same phenomenon exists in VET. In Poland, deficits in teacher and trainer training are suggested by interviewees as the reason why teacher-centred instruction practices, especially lectures, are the dominant mode of teaching despite the reforms aiming at learner-centred teaching and better linking between theory and practice in VET programmes ⁽³³⁾.

⁽³³⁾ Interview: Jerzy Kropka 8 April 2009.

Janusz Zmijscy, the author of a school curriculum for logistics, indicates the lack of preparation of teachers and trainers as the major problem for curriculum implementation, although Poland has invested in new modes of information for teachers, especially through the use of the Internet.

In the study visits, teachers expressed their satisfaction with in-service training provision. The student survey confirmed that active learning methods are used in both Germany and the Netherlands, but the paradigmatic change ‘from teaching to learning’ is not always seen as positive by students and teachers who sometimes perceive new learning methods as ‘too open’ and not ‘structured’ enough. This could indicate that the introduction of learning outcomes, insofar as it sought change in learning and teaching practice, might partly miss its target because of opposition among teachers and trainers. The results of the study visits and interviews must be used carefully, as they are far from being representative in terms of sample. The pedagogic freedom granted to teachers and the level of decision-making of training providers allow for a certain degree of diversity even within one country.

5.3. Policy considerations

Education systems in the European Union are diverse, a fact which raises many issues with regard to international mobility of learners and workers, but which is also regarded as an asset and the expression of the cultural diversity of the continent. Although the Member States face common economic and social challenges, and are developing common European instruments on recognition and transparency of qualifications, VET curricula are very different from country to country. Not only their content, but also their shape and forms, reflect different institutional and cultural traditions. Formulating meaningful policy recommendations for all of them is a challenge which can be met only to a certain degree by staying either at a very general level or by going down to the micro-level, where learning practices become similar on the ground that the human brain works the same in all countries.

This study demonstrates that opting for outcome-oriented approaches in curricula is perceived as a powerful means of making VET systems more learner-centred in many countries. There are, however, conditions to successful implementation of outcome-oriented curricula ⁽³⁴⁾.

⁽³⁴⁾ See also conclusions and recommendations drawn from Cedefop international workshop on Curriculum innovation and reform: policies and practices, organised to debate the findings of the present research study. The outcomes are available at the

First, too narrowly defined learning outcomes can be expected to hinder rather than to encourage a learner-centred approach. This is highlighted by constructivist learning theories, according to which the learner must play an active role in the construction of meaningful relationships between cognitive, functional, emotional and social skills to be competent in a particular situation. Too detailed and narrowly defined learning outcomes, oriented solely on functional performance, risk imposing constraints on the learning process and producing such effects as 'teaching to the test'. In practice, a shift can be observed in many countries from behaviouristic approaches to learning outcomes to more holistic understanding of competence. Germany, Ireland and the UK-Scotland provide good examples of how to formulate and use holistic outcomes in curricula to encourage changes in teaching and learning practices. At the same time, to fulfil their role as standards for ensuring identical achievement across the country, learning outcomes for each training unit must be clear and precise. Otherwise, curricula are not perceived as relevant in practice for the definition of learning programmes. A balance between the didactic and the regulative role of learning outcomes must be found. This could be based on a careful combination of the two approaches and the distinction in curricula between a holistic concept of competence, or a vision of the broad outcomes aimed at, and more detailed sets of knowledge, skills and attitudes to be achieved and demonstrated through assessment.

Second, learner-centred approaches require a real autonomy for teachers and training providers in defining learning programmes. This means that empowerment and accountability, as in quality assurance, are two essential aspects of learner-centred systems.

Although holistic, broadly defined learning outcomes may have significant potential for making systems more learner-centred, there is obviously a need for accompanying measures at all levels of the VET system. Empowerment is the key word which seems to summarise the success factors identified in the country studies. It is by taking the teacher's and trainer's perspective, that the needs for policy measures can best be assessed:

- (a) need for involvement, consultation and information on curriculum reforms at an early stage;
- (b) need for information and training in initial teacher education as well as in continuing training and education; a high degree of professionalisation is requested not only from teachers but, in apprenticeship systems, also from trainers in companies;

following website: <http://www.cedefop.europa.eu/EN/news/15108.aspx> [cited 19.3.2010].

- (c) need for material and financial support at school level, required to develop learning environments and teaching materials adapted to the expected learning outcomes and learner's needs;
- (d) need for support to school managers, including training in management skills and leadership, for them to cope with the new responsibilities granted to training providers in curriculum development matters, which often entail closer cooperation within the pedagogic team and with external partners;
- (e) need for guiding principles and inclusion of good practice examples in national curricula, to orient the definition of learning programmes at school or classroom level and ensure a basic level of coherence across the country;
- (f) need to develop and share guiding materials and tools for teachers and trainers on formative assessment of learners.

Accountability and quality assurance are central to avoiding potential pitfalls in decentralisation and to ensuring a high level of quality of training provision. In a learner-centred system, it is necessary to rethink the indicators to evaluate teaching practices, as compliance with predetermined rules becomes less important than innovative and flexible responses to the learner's individual needs. This also requires evaluating assessment practices to identify possible needs for better instruments and training of juries to assess learner achievements.

At the micro-level, the case study on logistics curricula revealed that the content of curricula and the teaching practices differ from country to country. However, no comparative study of learner achievements exists in that field to determine which approaches are most successful.

5.4. Issues for further research

The results of this study highlight issues requiring attention and actions from policy-makers and VET practitioners. However, they also reveal the limits of our knowledge and understanding of current developments in VET and of the effects and implications of European developments in education and training. Building on new EU and international studies of learning and teaching processes ⁽³⁵⁾, there are still many issues in need of further research.

First, making VET systems more learner-centred implies the need to relate different variables of the system in a coherent way, for instance curricula, guidance systems, financing systems, teacher and trainer qualifications. Although

⁽³⁵⁾ See OECD research on innovative learning environment (Centre for Educational Research and Innovation).

the use of learning outcomes in curricula might contribute as one of several elements to this objective, as shown by this study, it might not be sufficient. What does the learner-centred paradigm imply for the different parts of the VET system?

Second, little is known about learning and teaching processes in VET in class and in companies ³⁶). International comparisons are lacking. Although active learning is promoted in curricula, the study visits and interviews seem to indicate that teaching practices are not changing as fast and radically as expected to match what is written.

Third, this study was limited to analysis of intended learning outcomes. The question of achieved learning outcomes in VET is still open. For general education, the PISA project has shown how different achievements are opening up debate and research on success factors. To date, a similar empirical basis is still lacking in VET.

Fourth, a limitation of this study was its focus on initial VET. In the context of lifelong learning, many questions arise concerning the permeability between different education and training subsystems: higher education and VET on the one hand, initial VET and continuous VET on the other hand. What are the obstacles, what are the mechanisms and policies to aid mobility between those sectors? In most countries, continuous VET is much less centralised than initial VET and it is more subject to the regulating rules of the market than initial VET, which is still controlled by the state. Because of the resulting diversity and fragmentation, cross-country comparisons are more difficult to carry out. Nonetheless, the quality and innovative potential of continuous VET is of high relevance to a knowledge society and deserves to be examined more closely, especially in relation to the new requirements of EU policy on the recognition and transfer of learning outcomes.

Learning outcomes are commonly presented as a powerful mechanism to improve permeability between different education and training subsystems and levels. To date, empirical evidence is scarce. Could research of individual learning careers confirm this view? How should learning outcomes be defined and used to fulfil a permeability function? These are a few of the many questions remaining to be answered on this shift to learning outcomes approaches in curriculum development and teaching practice.

³⁶) Projects of that kind have been carried out for lower secondary education by the OECD (2009).

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ANNEX 1

Curriculum examples

Scottish Vocational Qualification 'Logistics Operations Management' level 3

Candidates have to complete 8 units comprising 3 mandatory units and 5 optional units. Candidates must take a minimum of 1 unit from Group A and Group B, 3 other units to be taken from Groups A, B and C. A maximum of 3 units from each group can be taken.

Compulsory units:

- Identify the logistics requirements of a supply chain
- Promote and maintain health, safety, and security in logistics operations
- Promote compliance of logistics operations with legislation, regulations and organisational procedures

Group A:

- Schedule logistics operations to meet customer requirements
- Optimise the use of logistics resources
- Develop contingency plans for logistics operations
- Utilise transport modes in logistics operations
- Apply technology in logistics operations

Group B:

- Develop relationships with logistics customers
- Improve the quality of logistics operations
- Respond to contingencies during logistics operations
- Monitor the environmental impact of logistics operations

Group C:

- Manage the receipt, storage, or dispatch of goods
- Audit stock levels and stock records
- Provide leadership for your team
- Allocate and check work in your team
- Arrange the transportation of goods using multiple transport modes
- Organise the preparation of documentation for the transportation of goods

Source: Scottish Qualifications Authority, Information sheet G8WC 23, 2008. Available from Internet: <http://www.sqa.org.uk/sqa/enduserpdfview.htm?id=2159> [cited 19.4.2010].

Stakeholders involved in the development of the curriculum *Fachkraft für Lagerlogistik, Germany*

Employer organisations: <ul style="list-style-type: none">• Kuratorium der Deutschen Wirtschaft für Berufsbildung, Bonn• Deutscher Industrie- und Handelskammertag, Berlin• Deutscher Speditions- und Logistikverband e.V., Bonn• Hauptverband des Deutschen Einzelhandels, Berlin
Employee organisations: <ul style="list-style-type: none">• Industriegewerkschaft Metall• Deutscher Gewerkschaftsbund
Public authorities: <ul style="list-style-type: none">• Federal Ministry of Economy and Labour• Federal Ministry of Education and Research• Federal States• Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany (KMK)• VET teacher
Others: <ul style="list-style-type: none">• ProVadis, private school in VET• VW-coaching, private school in VET

Source: Bundesinstitut für Berufsbildung (BIBB) (2006). Available from Internet: <http://www.bibb.de/de/11873.htm> [cited 19.4.2010].

Stakeholder involvement in the design of logistics curricula in France

- Employers: <ul style="list-style-type: none">o MEDEF (4 seats): union of employerso CGPME (1 seat): union of employers from small and medium businesses
- Employees: <ul style="list-style-type: none">o CGT, CFDT, CGT-FO, CFTC, CFE-CGT (1 seat each): trade unions
- Public bodies: <ul style="list-style-type: none">o Ministry of Education (2 seats)o ANPE (1 seat): national employment agencyo CEREQ (1 seat): research centre dependent from the Ministry of Educationo Ministry of Transport (1 seat)
- Experts: <ul style="list-style-type: none">o UNSA-Fed Transport (1 seat): union of employees from the transport sectoro ACFCI (1 seat): association of chambers of trade and industryo AFPA (1 seat): National association for adult education (public CVET provider)o FAGERH (1 seat): organisation representing the interests of disabled persons regarding work and educationo APCM (1 seat): association of chambers of crafts and trades

Source: Available from Internet: <http://www.di.afpa.fr/deat/esp-services/CPC/membres.htm#TRANSPORT> [cited 23.11.2009].

Excerpt of a final assessment task of the unit 'organising and managing logistics activities', Baccalauréat professionnel Logistique from the year 2006

Competences to be evaluated:

- Participate to human resource management;
- Manage resources
 - Ensuring a monitoring of the human resources
 - React to gaps, disruptions and problems

Your boss asks you to make a study on the productivity of the employees in the service preparing orders, and to suggest ways of improvement. You are provided with a table summarising the attribution of the productivity bonus and the calculation sheet for the collectivity bonus in 2005.

Tasks:

1. In order to identify the yearly productivity bonus granted to each employee, complete the calculation sheet for productivity bonuses in 2005 (Annex B2).
2. Which are the employees causing problems in this division? Suggest at least three measures to improve the situation.
3. Calculate the average failure quota of the division.

In a few lines, comment your results from questions 1 and 4 and propose at least three ideas how to motivate the whole team of this division so as to improve the quality of their productivity.

Source: Baccalauréat professionnel Logistique. Ministère de l'enseignement, de la recherche et de la technologie: Arrêté portant création du baccalauréat professionnel spécialité logistique, et fixant ses modalités de préparation et de délivrance, 30.1.2002.

ANNEX 2

List of experts contacted

The study benefited from the information provided by national experts: written, through interviews and access given to official work documents related to curriculum development.

Country	Name	Institution
France	Stéphane Balas	Ministère de l'Education Nationale
	Annie Boudier	CEREQ
	Jean-Louis Kirsch	CEREQ
Germany	Ingo Bargfrede	Staatliche Gewerbeschule Werft und Hafen, Hamburg
	Gerd Busse	DNL-Projekt, Dortmund
	Franz-Xaver Daller	Logistikzentrum Bildungswesen AUDI AG, Ingolstadt
	Philipp Grollmann	Federal Institute for Vocational Education and Training
	Jens Klusmeyer	Institut für Berufsbildung Universität Kassel
	Bernd Peppinghaus	Federal Institute for Vocational Education and Training
	Kai Sanmann	Staatliche Gewerbeschule Werft und Hafen, Hamburg
Ireland	Mary Kett	Department of Education and Science
	Siobhan Magee	Further Education Support Service, Cavan
Netherlands	Ben Hövels	Kenniscentrum Beropesonderwijs Arbeidsmarkt (KBA), Nijmegen
	Jan F. Spoor	ROC Rijs Ijssel, Arnhem
	Rob van Wezel	Kenniscentrum Handel (KC Handel), Ede
Poland	Jerzy Kropka	Regional centre of education and training 'WOM', Katowice
	Ryszard Świekatowski	Poznań School of Logistics, Poznań
	Michał Szalewski	Jakuba Stefana Cezaka school, Zgierz
	Janusz Zmijsy	Grammar school, Łódź
Romania	Gabriela Ciobanu	National Centre for TVET Development
Slovenia	Roman Krajnc	Secondary School for Service Activities and Logistics, Celje
	Andrej Prasnikar	Secondary Vocational and Technical School Bežigrad-Ljubljana
	Darja Rebevšek	Secondary School for Service Activities and Logistics, Celje
	Maja Sedmak	Secondary Vocational and Technical School Bežigrad-Ljubljana
Spain	Maria Inés Sancha Gonzalo	Fundación Tripartita para la Formación en el Empleo
	José Luis Garcia Molina	Instituto Nacional de las Cualificaciones
United Kingdom	May Sweeney	Learning and Teaching Scotland
	John Mc Cann	Scotland's Colleges, Stirling

Also interviewed during study visits were:

- (a) the logistics teachers of the Berufsbildende Schulen Oschersleben – Europaschule and their students who participated in the survey (Oschersleben, Germany),
- (b) the logistics students of the ROC Rijn Ijssel who participated in the survey (Arnhem, the Netherlands).

The study further benefited greatly from the active participation of the following experts in the workshop ‘Curriculum innovation and reform: policies and practices’ organised by Irene Psifidou, Cedefop project manager, in Thessaloniki, on 9-10 November 2009.

Country	Name	Institution
Denmark	Lene Jensby Lange	Consultant, Glostrup
Finland	Hannele Niemi	University of Helsinki
France	Vanessa Shadoian	OECD
Greece	Stefanos Michelakakis	IEK Politistikou Thessalonikis
	Nikos Papadakis	University of Crete
	Vassilis Valmas	Training consultant
Ireland	Elizabeth McSkeane	Consultant to European Commission
	Siobhan Magee	Further Education Support Service, Cavan
Lithuania	Vincentas Dienys	Methodological Centre for VET
Netherlands	Anneke Westerhuis	CINOP
	Jan Spoor	ROC Rijs Ijssel, Arnhem
Poland	Anton Radu-Constantin	Frontex
Romania	Zoica Vladut	National Centre for Technical and Vocational Education Development
Slovenia	Boris Klančnik	Vocational school, Velenje
Spain	Caterina Casado Latorre	Departament d'Educació Generalitat de Catalunya
Switzerland	Renato Operti	Unesco – International Bureau of Education, Geneva
United Kingdom	Tom Leney	Qualifications and Curriculum Authority
	John McCann	Scotland's Colleges, Stirling
United States	Aaron Benavot	Albany State University of New York
	Juan Manuel Moreno	World Bank



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Learning outcomes approaches in VET curricula

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Learning outcomes approaches in VET curricula

A comparative analysis of nine European countries

By comparing national curriculum reforms and analysing learning programmes in logistics, this comparative study examines the use of learning outcomes approaches in curriculum development in nine European countries: Germany, Ireland, Spain, France, the Netherlands, Poland, Romania, Slovenia and UK-Scotland.

Based on an extensive literature review, interviews and surveys conducted with different stakeholders in curriculum policy-making and practice, the findings show how learning outcomes increasingly feature in VET curricula, influencing their development and changing their content and structure.

The study reveals differences in the understanding and use of learning outcomes among countries and types of education and training. It highlights how developing curricula around the expected knowledge, skills and competences learners should acquire at the end of a learning process is seen as an effective way of bringing education and training closer to the needs of learners and the labour market in many European countries.

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of Vocational Training

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