Content

Tuning Educational Structures in Europe

The name *Tuning* was chosen for the project to reflect the idea that universities do not look for uniformity in their degree programmes or any sort of unified, prescriptive or definitive European curricula but simply for points of reference, convergence and common understanding. The protection of the rich diversity of European education has been paramount in the Tuning Project from the very start and the project in no way seeks to restrict the independence of academic and subject specialists, or undermine local and national academic authority.

1. Introduction

Tuning Educational Structures in Europe is a university driven project which aims to offer a concrete approach to implement the **Bologna Process** at the level of higher education institutions and subject areas. The Tuning approach consists of a methodology to (re-) design, develop, implement and evaluate study programmes for each of the Bologna cycles. It can be considered valid worldwide, since it has been tested in several continents and found fruitful.

Furthermore, Tuning serves as a platform for developing reference points at subject area level. These are relevant for making programmes of studies comparable, compatible and transparent. Reference points are expressed in terms of learning outcomes and competences. Learning outcomes are statements of what a learner is expected to know, understand and be able to demonstrate after completion of a learning experience. According to Tuning, learning outcomes are expressed in terms of the *level of competence* to be obtained by the learner. Competences represent a dynamic combination of cognitive and meta-cognitive skills, knowledge and understanding, interpersonal, intellectual and practical skills, and ethical values. Fostering these competences is the object of all educational programmes, which build on the patrimony of knowledge and understanding developed over a period of many centuries. Competences are developed in all course units and assessed at different stages of a programme. Some competences are subject-area related (specific to a field of study), others are generic (common to any degree course). It is normally the case that competence development proceeds in an integrated and cyclical manner throughout a programme. To make levels of learning comparable the Tuning subject area groups have developed cycle (level) descriptors which are also expressed in terms of competences.

According to Tuning, the introduction of a three cycle system implies a change from a staff centred approach to a student oriented approach. It is the student that has to be prepared as well as possible for his or her future role in society. Therefore, Tuning has organized a Europe-wide consultation process including employers, graduates and academic staff /faculty to identify the most important competences that should be formed or developed in a degree programme. The outcome of this consultation process is reflected in the set of reference points —generic and subject specific competences— identified by each subject area.

Besides addressing the implementation of a three cycle system, Tuning has given attention to the Europe-wide use of the student workload based European Credit Transfer and Accumulation System (ECTS). According to Tuning ECTS is not only a system for facilitating the mobility of students across Europe through credit accumulation and transfer; ECTS can also facilitate programme design and development, particularly with respect to coordinating and rationalising the demands made on students by concurrent course units. In other words, ECTS permits us to plan how best to use students' time to achieve the aims of the educational process, rather than considering teachers' time as a constraint and students' time as basically limitless. According to the Tuning approach credits can only be awarded when the learning outcomes have been met.

The use of the learning outcomes and competences approach might also imply changes regarding the teaching, learning and assessment methods which are used in a programme. Tuning has identified approaches and best practices to form specific generic and subject specific competences.

Finally, Tuning has drawn attention to the role of quality in the process of designing or re-designing, developing and implementing study programmes. It has developed an approach for quality enhancement which involves all elements of the learning chain. It has also developed a number of tools and has identified examples of good practice which can help institutions to boost the quality of their study programmes.

Launched in 2000 and strongly supported, financially and morally, by the European Commission, the Tuning Project now includes the vast majority of the Bologna signatory countries.

The work of Tuning is fully recognized by all the countries and major players involved in the Bologna Process. At the Berlin Bologna follow-up conference which took place in September 2003, degree programmes were identified as having a central role in the process. The conceptual framework on which the Berlin Communiqué is based is completely coherent with the Tuning approach. This is made evident by the language used, where the Ministers indicate that degrees should be described in terms of workload, level, learning outcomes, competences and profile.

As a sequel to the Berlin conference, the Bologna follow-up group has taken the initiative of developing an overarching *Framework for Qualifications of the European Higher Education Area* (EQF for HE) which, in concept and language, is in full agreement with the Tuning approach.

This framework has been adopted at the Bergen Bologna follow-up conference of May 2005. The EQF for Higher Education has made use of the outcomes both of the Joint Quality Initiative (JQI) and of Tuning. The JQI, an informal group of higher education experts, produced a set of criteria to distinguish between the different cycles in a broad and general manner. These criteria are commonly known as the «*Dublin descriptors*». From the beginning, the JQI and the Tuning Project have been considered complementary. The JQI focuses on the comparability of cycles in general terms, whereas Tuning seeks to describe cycle degree programmes at the level of subject areas. An important aim of all three initiatives (EQF, JQI and Tuning) is to make European higher education more transparent. In this respect, the EQF is a major step forward because it gives guidance for the construction of national qualification frameworks based on learning outcomes and competences as well as on credits. We may also observe that there is a parallel between the EQF and Tuning with regard to the importance of initiating and maintaining a dialogue between higher education and society and the value of consultation —in the case of the EQF with respect to higher education in general; in that of Tuning with respect to degree profiles.

In the summer of 2006 the European Commission launched a European Qualification Framework for Life Long Learning. Its objective is to encompass all types of learning in one overall framework. Although the concepts on which the EQF for Higher Education and the EQF for LLL are based differ, both are fully coherent with the Tuning approach. Like the other two, the LLL variant is based on the development of level of competences. From the Tuning perspective both initiatives have their value and their roles to play in the further development of a consistent European Education Area.

This brochure contains the key general documents produced by the Tuning Project. These reflect in synthesis the consensus reached by the Tuning membership about the topics mentioned above. All the chapters have been published before in the more extended Tuning 1 and Tuning 2 volumes. These volumes can be found on the Tuning website. For the purpose of this brochure the contributions have been revised and updated.

Moreover specific brochures have been produced for each of the subject areas covered by the Tuning Project. Each of these specific brochures contains a general description of one subject area based on the reference points identified during the Tuning process. In particular they concentrate on the first two cycles of the Bologna three cycle system (bachelors, masters and doctorate). More detailed information of the third

cycle, both in general and at subject area level, can be found in the first volume of the Tuning Journal.

We hope and believe that the material contained in this brochure will be very useful for all higher education institutions wanting to implement the Bologna Process, and that it will help them to find and use the most suitable tools for adapting or creating higher education programmes to respond to the needs of today's society.

The Tuning Management Committee

December 2006

2. Tuning methodology

Tuning Motto:

Tuning of educational structures and programmes on the basis of diversity and autonomy

In the framework of the Tuning Project a methodology has been designed to understand curricula and to make them comparable. Five lines of approach have been distinguished to organize the discussions in the subject areas:

1) generic competences or transferable skills,

2) subject-specific competences,

3) the role of ECTS as an accumulation system,

4) approaches to learning, teaching, and assessment and

5) the role of quality enhancement in the educational process (emphasizing systems based on internal institutional quality culture).

In the first phase of the Tuning Project the emphasis was on the first three lines. The fourth and fifth lines had a central place in the second phase of the project (2003-2004). The third phase concentrated on the third cycle (doctorate) as well as the development of strategies to implement the Tuning approach in practice in Higher Education Institutions in general and in subject areas in particular.

Each line has been developed according to a pre-defined process. The starting point was updated information about the state of the art at European level. This information was then reflected upon and discussed by teams of experts in the now nine subject related areas. It is the work of these teams, validated by the respective European networks, that has provided understanding, context and conclusions which can be considered valid at European level. All together, the five lines of approach allow universities to «*tune*» their curricula without losing their autonomy and at the same time stimulate their capacity to innovate.

Tuning Model

Furthermore Tuning developed a model for designing, implementing and delivering curricula offered within one institution, or, jointly, by two or more institutions. The following main steps in the process for designing a study programme either a local programme or an (international) integrated programme/joint degree were identified:

1. Meeting the basic conditions:

—For all study programmes:

- Has the social need for the programme on a regional/national/European level been identified? Has this been done on the basis of a consultation of stakeholders: employers, professionals and professional bodies?
- Is the programme of sufficient interest from the academic point of view? Have common reference points been identified?
- Are the necessary resources for the programme available inside or, if required, outside the (partner) institution(s) concerned?

—For international degree programmes offered by more than one institution:

- Is there commitment of the institutions concerned? On what basis: an (official) agreement or a strategic alliance?
- Is there sufficient guarantee that the programme will be recognised legally in the different countries?
- Is there agreement with regard to the length of the programme to be designed in terms of ECTS-credits based on student workload?

2. Definition of a degree profile.

3. Description of the objectives of the programme as well as the learning outcomes (in terms of knowledge, understanding, skills and abilities) that have to be met.

4. Identification of the generic and subject specific competences which should be obtained in the programme.

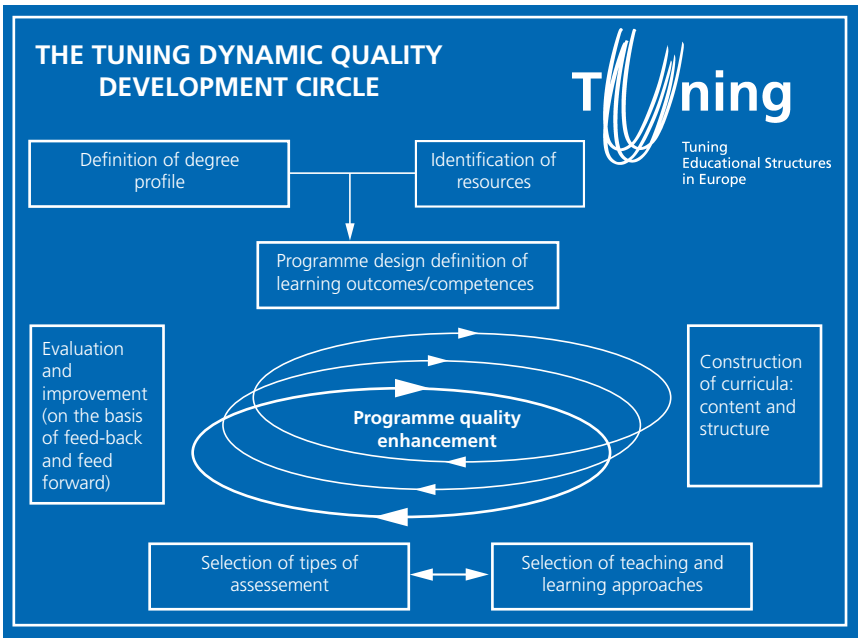
5. Translation into the curriculum: content (topics to be covered) and structure (modules and credits)

6. Translation into educational units and activities to achieve the defined learning outcomes.

7. Deciding the approaches to teaching and learning (types of methods, techniques and formats), as well as the methods of assessment (when required, the development of teaching material)

8. Development of an evaluation system intended to enhance its quality constantly.

This process is reflected in the following flow chart:



This model is based on the assumption that programmes can and should be enhanced on the basis not only of feedback but also of «feed forward» by taking into account developments in society as well as the academic field concerned. This is illustrated by the progressive loops in the model.

ECTS

One of the main innovations of Tuning has been to link learning outcomes, competences and ECTS workload based credits. As part of Tuning I it was necessary to develop a new concept for ECTS. This concept implies the change of the European Credit Transfer System into a European Credit Transfer and Accumulation System, in which credits no longer have a relative value but have an absolute one and are linked to learning outcomes. In the new ECTS system the award of credits depends on full achievement of the desired learning outcomes for a unit or module. The philosophy as well as its features are reflected in the paper *Educational Structures, Learning Outcomes, Workload and the Calculation of ECTS Credits,* which formed the basis for the new ECTS Users' Guide published by the European Commission in the Summer of 2004[1].

Learning outcomes and competences

The introduction of a two or three cycle system makes it necessary to revise all existing study programmes which are not based on the concept of cycles. In practice these programmes have to be redesigned because in a cycle system each cycle should be seen as an entity in itself. The first two cycles should not only give access to the following cycle but also to the labour market. This shows the relevance of using the concept of competences as a basis for learning outcomes.

Tuning makes the distinction between learning outcomes and competences to distinguish the different roles of the most relevant players: academic staff and students/learners. Desired learning outcomes of a process of learning are formulated by the academic staff, preferably involving student representatives in the process, on the basis of input of internal and external stakeholders. Competences are obtained or developed during the process of learning by the student/learner. In other words:

- Learning outcomes are statements of what a learner is expected to know, understand and/or be able to demonstrate after completion of learning. They can refer to a single course unit or module or else to a period of studies, for example, a first, a second and a third cycle

1 ECTS Users' Guide: http://europa.eu.int/comm/education/socrates ects.html.

programme. Learning outcomes specify the requirements for award of credit.

- Competences represent a dynamic combination of knowledge, understanding, skills and abilities. Fostering competences is the object of educational programmes. Competences will be formed in various course units and assessed at different stages.

Competences can be distinguished in subject specific and generic ones. Although Tuning acknowledges to the full the importance of building-up and developing subject specific knowledge and skills as the basis for university degree programmes, it has highlighted the fact that time and attention should also be devoted to the development of generic competences or transferable skills. This last component is becoming more and more relevant for preparing students well for their future role in society in terms of employability and citizenship.

Tuning distinguishes three types of generic competences:

- Instrumental competences: cognitive abilities, methodological abilities, technological abilities and linguistic abilities;
- Interpersonal competences: individual abilities like social skills (social interaction and co-operation);
- Systemic competences: abilities and skills concerning whole systems (combination of understanding, sensibility and knowledge; prior acquisition of instrumental and interpersonal competences required).

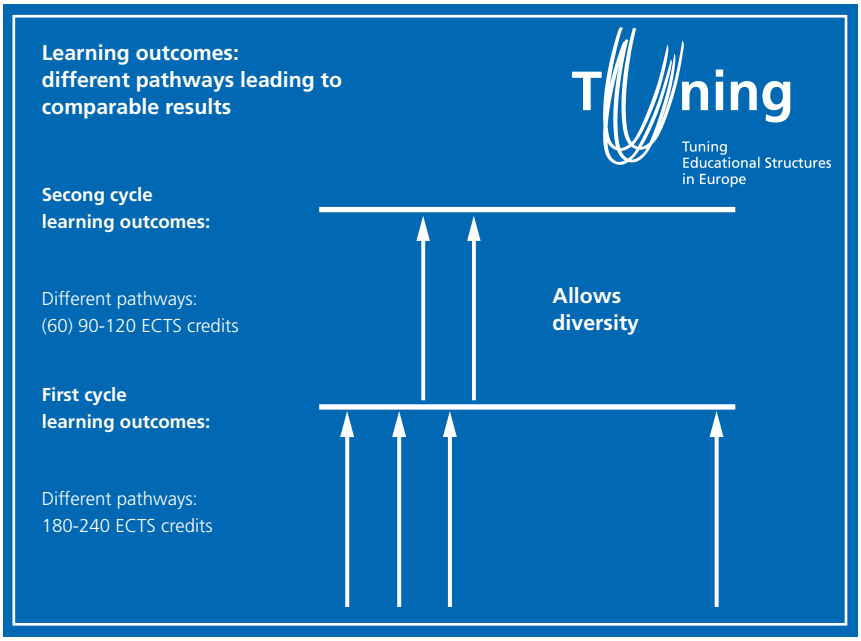
As part of Tuning I, a large scale consultation was organized among graduates, employers and academics to identify the most important generic competences for each of the academic fields involved. Although the set of most relevant generic competences differed slightly between the different subject areas, for most competences there was a striking similarity between the fields. In all fields typical academic competences were identified as being the most important ones, like the capacity for analysis and synthesis, the capacity to learn and problem solving. In particular the graduates and employers, who proved to be remarkably in agreement, showed that other generic competences as well were seen as being very important for employability, like the capacity for applying knowledge in practice, the capacity to adopt to new situations, concern for quality, information management skills, ability to work autonomously, team work, capacity for organizing and

planning, oral and written communication in your native language as well as interpersonal skills. It was also concluded by graduates and employers that some of the competences mentioned above were of more use and developed to a higher level than others. They drew attention to the fact that more attention should be given to a specific number of generic competences to prepare students better for their future workplace. The outcome of this extended consultation process is discussed in the next chapter.

Subject specific competences have been identified already for nine subject areas e.g. Business Administration, Chemistry, Education Sciences, European Studies, History, Earth Sciences, Mathematics, Nursing and Physics as part of the Tuning Project and also for a growing number of thematic networks focussing on a field of study. These sets of competences are reflected in separate brochures prepared by the subject area groups of the project and have been or are prepared by thematic networks or other subject area networks. The approaches of the groups differed, because of differences in the structure of the disciplines; nonetheless, all followed a similar procedure to obtain their results. Through discussion, creation of reciprocal knowledge and mapping the ways the subject area is learned and taught in the various countries, insight was gained and consensus built on what constitutes the vital core of each subject area. The documents which resulted should be understood to be working documents, subject to further elaboration and change.

In Tuning competences are described as reference points for curriculum design and evaluation, not as straightjackets. They allow flexibility and autonomy in the construction of curricula. At the same time, they provide a common language for describing what curricula are aiming at.

The use of learning outcomes allows for much more flexibility than is the case in more traditionally designed study programmes, because they show that different pathways can lead to comparable outcomes; outcomes which can be much more easily recognized as part of another programme or as the basis for entrance to a next cycle programme. Their use fully respects the autonomy of other institutions as well as other educational cultures. Therefore this approach allows for diversity, not only in a global, European, national or institutional framework, but also in the context of a single programme. This concept is summarized in the following scheme:



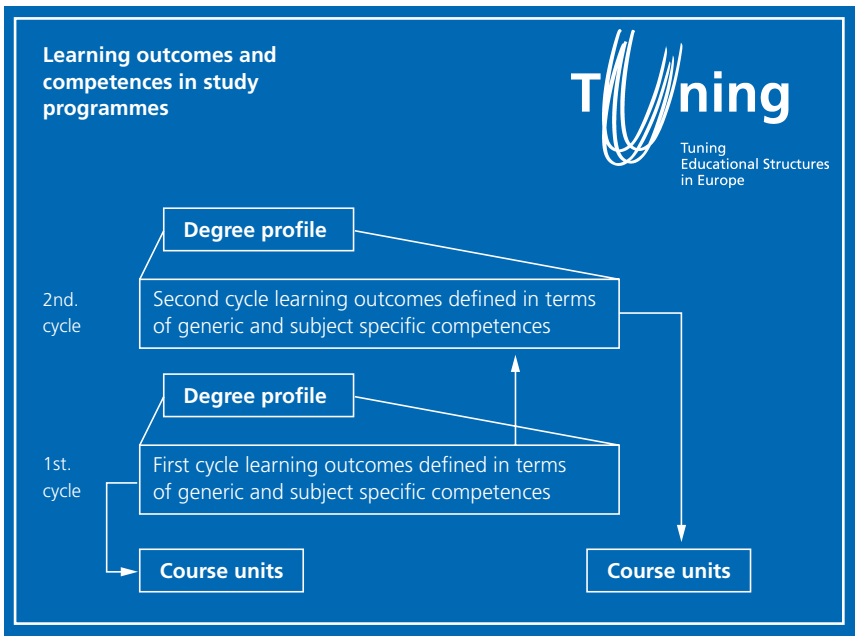
Student centred

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. Still today, many study programmes are staff centred, which means in practice that they are input oriented. They often reflect a combination of the fields of interest and expertise of the members of staff. In effect this leads to programmes of rather loose units which might not be sufficiently balanced and most effective. Although Tuning recognizes fully the importance of making maximum use of the available expertise of the staff, this aspect should not dominate a programme.

In an output based study programme the main emphasis lies on the degree or qualification profile. This profile is determined by the academic

staff and endorsed by the responsible authorities. The profile should be based on an identified and recognized need by society —in practice internal stakeholders, that is the academic society, as well as external stakeholders like employers (organizations), graduates and professional organisations. All have their place in deciding which competences, generic and subject-specific, need to be emphasised and to what extent. Although every programme profile is unique and based on the judgements and decisions of the academic staff, this staff has to take into account specific features which are seen as being crucial for the subject area concerned. In other words: what makes a business programme a business programme. In the framework of Tuning groups of academics have defined these sets of features for their own discipline. These are reflected in so-called Templates, or Summaries of Outcomes containing synthetic indications within a common format, which are based on more extensive papers.

In a cycle system each cycle should have its own set of learning outcomes formulated in terms of competences. This can be visualized using the following scheme:



As stated before, learning outcomes are formulated both at programme level and on the level of individual course units or modules. The learning outcomes of the individual units add to the overall learning outcomes of the programme. The situation for the competences to be acquired is more or less comparable. Competences are developed in a progressive way. This means that they are formed in a number of course units or modules at different stages of the programme. During the design phase of the programme it has to be decided in which units a particular competence has to be formed. Depending on the size of a unit or module Tuning is convinced that it is advisable not to include more than six to eight competences in the learning outcomes for that unit. Although there might be competences which can be trained implicitly in a programme, only competences which can actually be assessed should be mentioned explicitly. The following scheme shows a possible approach for dividing competences over course units or modules.

Learning outcomes and competences in study programmes

Tuning
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Example

Course unit/ learning outcome	Competence									
	A	B	C	D	E	F	G	H	I	J
Unit 1		X			X					
Unit 2	X			X			X			
Unit 3		X				X			X	
Unit 4	X		X							X

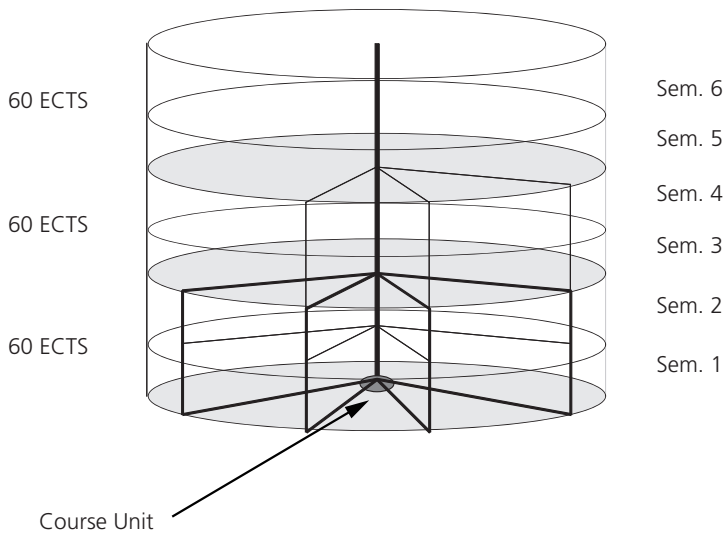
X = This competence is developed and assessed and is mentioned in the learning outcome of this unit

As has been shown above, for Tuning, a study programme is not a summing-up of a number of loosely related course units; it must be handled as an entity in itself. This requires a more holistic approach. In a student

centred-/output-oriented study programme, all units in one way or another are related to each other. This not only applies to the units or modules which are part of the major or the core part of the programme, but also to minor courses and electives. In a well designed programme, minors and electives should strengthen the profile of the programme.

In the vision of Tuning a study programme can be seen as a large cake, with different levels, in which all slices are linked to one other, either in a horizontal or in a vertical way. In more formal educational terms: the learning outcomes of the individual units or modules add to the overall learning outcomes and to the development of the level of competences, taking into full consideration the learning outcomes to be achieved in other units. This concept can be visualized in a more schematic form as the following model shows:

FIRST CYCLE PROGRAMME



The model presumes progression regarding the achievement of learning outcomes expressed in terms of competences. Each course unit has a role in the overall curriculum. It distinguishes three periods of 60 credits which again are subdivided into two. This is the more traditional way a programme is taken: semester by semester. However, it also shows that

other options are possible. For example a student can study one part of a programme in greater depth, by taking two units (or slices) in a vertical way if the prerequisites (entrance conditions) of this unit allow this. One can imagine that a student studying a language will focus first on language acquisition and will then concentrate on either literature or linguistics, although the official order of the programme might be different. It also shows that separate units, followed successfully in another context, can be fitted into the study programme on the basis of prior recognition. In a life long learning context and in more flexible programmes this might be very relevant.

One of the main objectives of the Bologna process is to make study programmes and periods of learning more comparable and compatible. This objective is strongly promoted by making use of the concept of levels, learning outcomes, competences and ECTS credits. A further way to promote this aim is to base study programmes on units of equal size. Modularization of educational programmes will promote transparency, and will facilitate mobility and recognition. It may also help to make programmes more feasible to study, because it offers an instrument to balance the student workload over the different phases of the programme.

Levels

The use of cycles automatically includes the introduction of the concept of levels. A distinction can be made between levels for a cycle and levels within a cycle. For each of these level indicators can be used. They are called level descriptors. As part of the Bologna Process, a group of experts, the so-called Joint Quality Initiative, has developed sets of general descriptors for each cycle, which are called the Dublin descriptors. These cycle descriptors have now been endorsed by the European Ministers of Education as part of the report *A Framework for Qualifications of The European Higher Education Area*. The approaches of Tuning and the JQI are fully compatible and complementary.

Because cycle descriptors in practice are level descriptors which identify the level of a cycle, Tuning has suggested naming these descriptors cycle level descriptors, to distinguish them from intermediate or sublevel descriptors. Tuning has produced cycle level descriptors at programme level for the first and second cycle for each of the subject

areas included in the project. It has also debated the possibility of developing sublevel descriptors but has not yet come to a final conclusion. One can imagine, for example, that the following sublevels can be distinguished in university first cycle programmes: basic or fundamental, intermediate and advanced. For a second cycle programme a distinction might be made between the sublevels: advanced and specialized.

Prepared by Julia González and Robert Wagenaar

3. Competences in the teaching and learning process

Introduction

The Tuning Project is convinced that the development of competences in educational programmes can significantly contribute to opening an important area of *joint reflection and work at university level in Europe* about the new educational paradigm, the need for quality and the enhancement of employability and citizenship and the creation of the European Higher Education Area.

Focussing on competences promotes the development of easily readable and compatible degrees and thus promotes transparency in European education. The Tuning Project considers that degrees are comparable and compatible if the learning outcomes as well as the academic and professional profiles are comparable.

Comparability differs from homogeneity and, referring to academic and professional profiles, it is clear that diversity is not a draw back but an asset. The definition of professional profiles relates to the needs of society and social needs and demands are very varied. This requires consultation with social groups and the requests of professional bodies at local, national or international level (in accordance to the aims of the degree) need to be taken into consideration. It is in this context that consultations are important. These consultations can be done in a variety of ways and in every case, the most appropriate form and shape should be sought. This paper presents the findings of the consultations made by the Tuning Project as a tool for reflection to obtain up-dated information about the needs of society.

It has to be stressed that profiles are not only professional but also academic. Relating to academic institutions, degrees are expected to fulfil the requirements of the academic community at national and international levels. Looking for a common language to express academic and professional profiles, the Tuning Project considers that the language of competences can be useful for expressing comparability in terms of what the degree holders would be able to perform. It can also express

common points of reference for the different subject areas, offering a non prescriptive framework of reference for the academic community (in this case the European Academic Community) in a language which can be understood by European social groups, professional bodies and any other stakeholders in society.

Consultation becomes even more necessary in the «society of knowledge» which is, obviously, also a «society of learning». This idea is intimately linked with the understanding of all education in a wider context: the continuum of lifelong learning, where the individual needs competences to be able to handle knowledge, to update it, to select what is appropriate for a particular context, to learn permanently, to understand what is learned in such a way that it can be adapted to new and rapidly changing situations.

Change and variety of contexts both require a constant check on social demands for professional and academic profiles. This underlines the need for *consultation*, and *constant revision of information on adequacy.* Besides, the language of competences, since it comes from outside higher education, could be considered more adequate for consultation and dialogue with groups not directly involved in academic life. This contributes to the necessary reflection for the development of new degrees and for permanent systems of updating existing ones.

Thus, in the reflection on *academic and professional profiles,* competences emerge as an important element which can guide the selection of knowledge which is appropriate to particular ends. It presents an integrative capacity to choose what is appropriate from a wealth of possibilities.

The emphasis on learners obtaining a particular competence or set of competences also affects the transparency in the *definition of objectives* set up for a particular educational program, adding indicators with higher possibilities for being measured, while making these objectives *more dynamic* in taking into consideration the new needs of society and ultimately relating to employment. This shift normally shows a change in the *approach* to educational activities, teaching material and a great variety of educational situations, since it fosters the systematic involvement of the learner with individual and group preparation of relevant issues, presentations, organized feedback, etc.

The questionnaire

In the Tuning Project the consultation on transferable skills or generic competences was done by means of a questionnaire.

The objectives

The objectives of the questionnaire included:

- The wish to initiate the joint discussion on this field of competences at the European level, based on consultation with groups from outside academia (graduates and employers) as well as from a broader base in relation to academics (both Tuning representatives from each of the subject areas involved as well as other non Tuning people).
- The attempt to gather updated information for reflection on possible trends and the degree of variety and change all over Europe.
- The desire to start from the experience and the reality in order to reach levels of diversity or commonality between the different countries, starting the debate from specific questions with concrete language.
- The importance of focusing the reflection and debate at three different levels: the *institutional level* (the basis and the first one to take place), the *subject area level* (a reference point for the HE institutions) and the *aggregate level* (a second reference point in relation to the situation at European level).

The content of the questionnaire

Definition of competences

Several terms: capacity, attribute, ability, skill, competence are used with an often interchangeable, and to some degree overlapping meaning. They all relate to the person and to what he/she is able of achieving. But they also have more specific meanings. Ability, from the Latin «habilis» meaning «able to hold, carry or handle easily», led to the word «habilitas» which can be translated as «aptitude, ability, fitness or skill».

The term skill is probably the most frequently used, with the meaning of being able, capable or skilful. It is often used in the plural, «skills», and sometimes with a more restricted meaning than that of competences. This explains the choice of the term competences in the Tuning Project.

However, the two terms «transferable skills» and «generic competences» may be considered as having the same meaning. They relate to those competences which are common and can be identified in different degree programs at a certain level.

In the Tuning Project, the concept of competences tries to follow an integrated approach, looking at capacities via a dynamic combination of attributes that together permit a competent performance or as a part of a final product of an educational process. In Line One, competences are understood as to include *knowing and understanding* (theoretical knowledge of an academic field, the capacity to know and understand), *knowing how to act* (practical and operational application of knowledge to certain situations), *knowing how to be* (values as an integral element of the way of perceiving and living with others and in a social context). Competences represent a combination of attributes (with respect to knowledge and its application, attitudes, skills and responsibilities) that describe the level or degree to which a person is capable of performing them.

In this context, a competence or a set of competences mean that a person puts into play a certain capacity or skill and performs a task, where he/she is able to demonstrate that he/she can do so in a way that allows evaluation of the level of achievement. Competences can be assessed and developed. This means that, normally, persons do not either possess or lack a competence in absolute terms, but command it to a varying degree, so that competences can be placed on a continuum and can be developed through exercise and education.

In the Tuning Project two different sets of competences were focused on: Firstly, those competences which are *subject-area related*. These are crucial for any degree and they are intimately related to specific knowledge of a field of study. They are referred to as academic-subject specific competences. These give identity and consistency to the particular degree programmes. Secondly, Tuning tried to identify shared attributes which could be general to any degree, and which are considered important by particular social groups (in this case former graduates and employers). These are certain attributes like the capacity to learn, the capacity for analysis and synthesis, etc, which are common to all or most of the degrees. In a changing society where demands tend to be in constant reformulation, these generic competences also become very important because they can offer more possibilities for employment.

In the design and redesign of educational programmes, it is crucial that the University takes into consideration the changing needs of society as well as present and future employment possibilities. While these generic competences need to be in balance with the subject related ones, for the development of study programmes and degrees, they are of vital importance.

This paper deals with the generic competences, since subject-related competences have been analyzed using different approaches according to each subject area by the relevant groups of experts. It explains the consultation carried out as an exercise in collective reflection on what the different social groups thought of the importance of each of the selected items and how it was felt that the universities were performing in their achievement.

In the context explained, two questionnaires were carried out. The first questionnaire tried to identify the *generic* competences and how they were valued, first by graduates and employers and then in the second questionnaire (first part), by academics.

Obviously the list of competences identified and which can be reflected upon is vast. The choice of a number of items to be included in a questionnaire is always partial and questionable and subject to debate are also the different classifications. In order to prepare the *questionnaire for graduates and employers* a review of over twenty studies, in the field of *generic competences,* was carried out. A list of 85 different competences was identified. They were regarded as relevant by institutions of Higher Education or companies. These items were categorized as instrumental, interpersonal and systemic. The following was taken as a working classification:

—*Instrumental Competences*: Those having an instrumental function. They include:

- *Cognitive* abilities, capacity to understand and manipulate ideas and thoughts.
- *Methodological* capacities to manipulate the environment: organizing time and strategies of learning, making decisions or solving problems.
- *Technological* skills related to use of technological devices, computing and information management skills.
- *Linguistic* skills such as oral and written communication or knowledge of a second language.

—*Interpersonal Competences*: Individual abilities relating to the capacity to express one's own feelings, critical and self-critical abilities. *Social skills* relating to interpersonal skills or team-work or the expression of social or ethical commitment. These tend to facilitate processes of social interaction and of co-operation

—*Systemic competences*: those skills and abilities concerning *whole systems*. They suppose a combination of understanding, sensibility and knowledge that allows one to see how the parts of a whole relate and come together. These capacities include the ability to plan changes so as to make improvements in whole systems and to design new systems. Systemic competences require as a base the prior acquisition of instrumental and interpersonal competences.

The distribution of the competences mentioned in the sources consulted (without considering the frequency of repetitions of the same competence), based on the aforementioned typology, was as follows:

- Instrumental Competences (38%)
- Interpersonal Competences (41%)
- Systemic Competences (21%)

Looking at the frequency and trying to amalgamate related concepts the percentage changed, as follows:

- Instrumental Competences (46%)
- Interpersonal Competences (22%)
- Systemic Competences (32%)

It was interesting to note that interpersonal competences represented the greatest percentage in terms of the number of different competences (41%). However, since they appeared excessively varied and were not well-determined, when analyzed by frequency, this percentage went down to 22%. It seemed that instrumental competences were well delimited and repeated across many different approaches; for instance, technological competence (understood as use of a personal computer) or linguistic competence (oral and written communication).

On the other hand, interpersonal competences were very dispersed. They referred to personal aspects (self-concept, self-confidence, locus of

control, etc.) or interpersonal aspects as varied as assertiveness, interpersonal communication, face-to-face style, social commitment, etc.

Thus, a draft of the first questionnaire for graduates and employers was prepared. This initial draft tried to propose a balanced representation of competences from all three groups: instrumental, interpersonal and systemic. The provisional questionnaire was discussed at the first Tuning meeting and some items were changed by the Tuning members. Some groups also added competences more directly related to their subject area. (Mathematics, History and Education Science.)

These suggestions were incorporated and the definitive questionnaire was prepared. Also incorporated, in both graduate and employer questionnaires, was a series of variables for identification considered important to the study.

The definitive questionnaires comprised the following 30 competences:

—*Instrumental competences*

- Capacity for analysis and synthesis
- Capacity for organisation and planning
- Basic general knowledge
- Grounding in basic knowledge of the profession
- Oral and written communication in your native language
- Knowledge of a second language
- Elementary computing skills
- Information management skills (ability to retrieve and analyze information from different sources)
- Problem solving
- Decision-making

—*Interpersonal competences*

- Critical and self-critical abilities
- Teamwork
- Interpersonal skills
- Ability to w ork in an interdisciplinary team
- Ability to communicate with experts in other fields

- Appreciation of diversity and multiculturality
- Ability to work in an international context
- Ethical commitment

—*Systemic competences*

- Capacity for applying knowledge in practice
- Research skills
- Capacity to learn
- Capacity to adapt to new situations
- Capacity for generating new ideas (creativity)
- Leadership
- Understanding of cultures and customs of other countries
- Ability to work autonomously
- Project design and management
- Initiative and entrepreneurial spirit
- Concern for quality
- Will to succeed

Other interesting competences could have been included, for example «teaching ability». This would perhaps have provided a relevant perspective in relation to a significant sector of employment, but being specific for a sector it could create noise in the system. The responses of employers might also have been affected by the use of the word «advanced» rather than «basic» in relation to knowledge or grounding in the profession.

The questionnaires were translated into the 11 official languages of the EU by Tuning members. Each of the Universities sent and received back the questionnaires from their graduates and employers and sent them on to University of Deusto where the questionnaires were processed.

Each of the Universities received its own data file by e-mail and the graphs for the total and for the different subject areas. By agreement and for confidentiality reasons, no graph or analysis was made at central level (of the Tuning Project in relation to individual universities. Each University was expected to do the institutional analysis and reflection at local level and bring this to the area group. Also, each University could compare its own data with the overall outcomes and with the subject

area outcomes in order to draw its own conclusions and develop its own institutional strategies.

Procedure

The *procedure* requested of the coordinators at the participating universities, with respect to the selection of the different samples, was as follows:

—Questionnaire for Graduates

- Every university participating in the study had to sample a total of *150 graduates*.
- The graduates selected were to have graduated within the last *3 to 5 years*.
- This criterion depended on the *number of graduates* that had graduated in this period, as well as the professional destinations of the graduates.
- If there were few graduates each year, the sample would include those graduating within the last 5 years. If there were a large number, then the sample would be limited to those graduating in the last 3 years. In those few cases where there were not enough graduates from the participating institution, graduates from other similar institutions, in the same country, were included.
- In relation to the professional destinations of graduates, (given that the study was most interested in graduates who already were working), where graduates entered the world of work rapidly after graduation, the sample could be chosen among those who had graduated in the last 3 years. Otherwise, when graduates took longer to join the world of work, it was recommended to select the sample from those who had graduated in the last 5 years.
- The criterion for selection of the 150 graduates was at random. It was recommended that if there existed an *association of graduates* with an updated database of addresses, the selection would be made by the above mentioned association.
- The corresponding university sent the questionnaires to its graduates with a letter in which, as well as presenting the questionnaire, it asked them to send it by return to the university within the space of 10 days.
- The questionnaire and the letter of introduction were sent along with a stamped addressed envelope for the return of the questionnaire.

—Questionnaire for Employers

- Every university participating in the study has to gather information from *30 employers.*
- The criterion of selection was that they should be organizations known by the university as those who employed its graduates, and/or organizations which in spite of not having proved that they had employed graduates of the university, seemed likely to be interesting places of work for these graduates. Within these guidelines, universities were free to select whatever employers they thought as appropriate. It has been suggested that a tighter control on the balance of different types of employers might have been exercised so as to obtain more representative results. However, this would have imposed a fixed framework on a very varied reality.
- The corresponding university sent the questionnaires to the employers with a letter which, beside presenting the questionnaire, asked them to return it within 10 days.
- The questionnaire and the letter of introduction were sent along with a stamped addressed envelope for the return of the questionnaire.

—Questionnaire for Academics

- Every participating university was asked to gather information from, at least, 15 academics in the area in which the subject university was participating.
- Each university sent the academics a questionnaire in electronic form that they were asked to return within seven days.

Type of response requested

The questionnaires required two types of response:

1. Importance/Level of Achievement
2. Ranking the five competences considered most important.
   For each of the thirty competences, the respondents were asked to indicate:
   - The *importance* of the competence, in his/her opinion, for work in their profession and
   - the *level of achievement* of the competence that they estimated they have reached as a result of taking their degree programme.

To indicate this, respondents were asked to use a scale of 1 = none to 4 = strong.

Asking about both aspects (importance and level of achievement) responded to the interest in finding where their institution stood in terms of thirty competences arranged into four categories, represented in the diagram below:

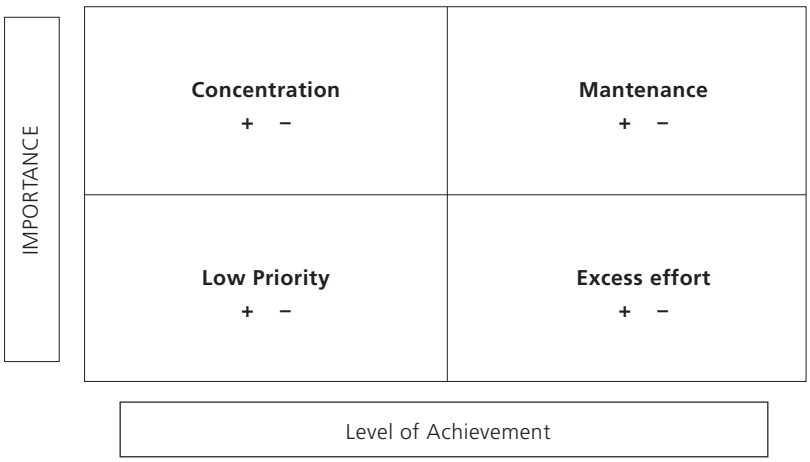


Diagram 1. AIR (Martilla and James, 1997)

- *Concentration*: that is to say, competences that were considered very important but in which there was little achievement.
- Low priority: competences which were not considered very important and in which achievement was low.
- Excess effort: competences that were not considered very important but in which achievement was high.
- Maintenance: competences that were considered important and in which achievement was high.

The importance of the chart was that it may help reflection and discussion at institutional level finding out the weak and strong points which could help to build policy (a matter of choice for the institution); to strengthen the weaker parts or even to get stronger at the strong points. What was

really crucial was to place the development of a system of consultation with the environment, and also to have the capacity to create systems which can help to develop joint strategies at the European level.

Ranking: As well as indicating the importance and level of achievement of each of the 30 competences, both groups (graduates and employers) were asked to indicate, in order, the five competences that they considered to be most important.

Commonly when people are asked to value the importance of different aspects of life, this valuation tends to be high. In general, the tendency is to value things as important, which can reasonably be considered as such, but without discriminating excessively between them. Being conscious that this could happen in the case of competences, it seemed suitable to request that respondents would choose the five most important competences and rank them in order of importance. These two pieces of information, importance and ranking, seemed relevant for the work.

The questionnaire sent to *academics*, was divided into two parts: The first part related to *generic competences.* The objective was to obtain a third perspective on competences to compare with those of graduates and employers. The content was based on the results obtained in the study of graduates and employers. Depending on this information, it was observed that there was a high level of agreement between graduates and employers on the 11 competences considered as most important by both groups. These 11 competences were included in the questionnaire sent to academics, as well as 6 others also considered as very important by graduates and employers. Academics were asked to rank these 17 competences in order of importance, in their opinion.

The second part of the questionnaire dealt with *specific, subject-related competences*. The objective of this part was to find the first response, from a broader base of academics from the relevant areas, to the work done by each of the groups of Tuning experts trying to identify subject-related competences and to relate them to either first or second cycle of studies in their particular field.

The difficulty of this task was clearly understood by the Tuning members. Equally clear was the understanding that what was at stake was the development of reference points which, understood only as such and in a dynamic framework, could be of vital importance in the development of the European HE Area.

The content of the second part of the academics' questionnaire was prepared by the Tuning working groups of experts in the different areas. Despite the fact that the questionnaire for each area was different, the way of responding was common. Respondents were asked, for each of the competences, to gauge the level of importance that it had, in their opinion, in both the first and second cycle.

The aim of both questionnaires was, as explained above, that of initiating joint reflection, so its main achievement needs to be considered as provoking reflection and debate. It is also important to note that the processes were conceived as having, as the bottom line of the joint discussion, the reflection that each of the Tuning participants brought to the group from his or her own institution, where the questionnaire results had the best context for interpretation. This objective affected the type and form of data collected.

Participants in the questionnaire

A total of 101 out of a total of 105 university departments participating in the Tuning Project took part in the consultation[2]. The choice of universities in the Tuning Project was a very complex process where the interest, the size of the country and the criteria of the local conference of Rectors had a place.

The data was first meant to be analyzed at the level of the institution, to provide the maximum degree of meaning. Also the two indicators seemed different in this context. While the opinion on achievement seems very important at institutional level, particularly in relation to the graduates, it can be regarded more as a perception as it relates to aggregate data or in relation to the employers. In relation to *importance* it may take to reflect the degree of importance they attached to a particular item in terms of its relation to work or development.

Specifically, seven subject areas took part in the consultation: Business, Education Sciences, Earth Sciences, History, Mathematics, Physics, and Chemistry, in relation to graduates, employers and academics.

2. In addition, for the questionnaire for Academics, the history thematic network (Cliohnet) also participated. Also in some, very limited instances, academics or graduates of other institutions giving similar degrees were consulted.

In each of these areas the following number of universities were invited to participate:

- Business: 15 universities, of which 14 participated
- Geology : 14 universities, all of them took part
- Mathematics: 15 universities, of which 13 participated
- Physics: 14 universities, all of them took part
- Education: 15 universities, of which 14 participated
- Chemistry: 15 universities, of which 14 participated

The *data* relating to the sample participating in the study are presented below.

Table 1

	Graduates		Employers		Academics	
	N	%	N	%	N	%
Business	921	17,8	153	16,2	153	15,3
Geology	656	12,7	138	14,6	145	14,5
History	800	15,4	149	15,8	221	22,1
Mathematics	662	12,8	122	12,9	122	12,2
Physics	635	12,3	85	9,0	121	12,1
Education Sciences	897	17,3	201	21,3	134	13,4
Chemistry	612	11,8	96	10,2	102	10,2
Total	5183	100,0	944	100,0	998	100,0

Although the intention of the consultation was to initiate a joint dialogue with social groups and the debates followed at institutional and subject area level could be considered the best results, the valuable work of 101 universities and the volume of data collected (5,183 questionnaires from graduates, 944 from employers and 998 from academics) deserve an attempt at some treatment for further reflection.

Methodology

The sample design was clustered, as respondents were clustered within Universities. Therefore assumptions of simple random sampling may not

be valid as respondents were not strictly independent from each other. At the same time, Universities showed some cluster effect at country level.

Clustered design is widely used in research and does not represent by itself a source of bias. Cluster sampling affects the survey sampling error of any estimate produced. The sampling error is increased depending on differences in measured items among clusters.

Based on data, this design effect due to cluster sampling may be estimated by intra-cluster correlation: high intra-cluster correlation indicates that differences among clusters are high, and therefore increases the survey sampling error. It should be noted that low intra-cluster correlation in any item, near to zero, indicates that a simple random sample would have produced similar results.

In relation to the results of the Tuning Questionnaire on generic competences simple random sampling estimates and procedures were avoided in either univariate or multivariate analysis. All estimates and conclusions take into account the clustered nature of data at both University and country level through multilevel modelling.

It was regarded as the most appropriate approach since multilevel models take into account the clustered structure of data (i.e. does not assume that observations are independent as in simple random sampling). These models have been widely used on educational data as their clustered structure.

At the same time multilevel modelling allows simultaneous modelling of individual and cluster level differences providing adequate estimates of standard errors and making appropriate any inference at both individual and cluster level.

In this context clusters are not regarded as a fixed number of categories of a explanatory variable (i.e. the list of selected universities as a fixed number of categories) but it considers that the selected cluster belong to a population of clusters. At the same time, it yields better estimates at individual level for groups with few observations.

Three different types of variables were analyzed:

- Importance items: 30 competences rated on importance by respondents (Graduates and Employers)
- Achievement items: 30 competences rated based on achievement (Graduates and Employers)

- Ranking: based on the ranking of the five most important competences provided by graduates and employers, a new variable was created for each competence. For each respondent the corresponding competence was assigned five points if it was the first selected competence, four if it was the second one, etc... and finally one point if it was selected in the fifth place. If the competence was not chosen by the respondent, zero points were assigned. For the academics, who had to rank a longer list of seventeen competences out of the previous thirty rated by graduates and employers, this ranking was created using a similar transformation applied to a seventeen points scale: seventeen was assigned if the competence was chosen first, sixteen to the second competence, etc.

Results

Graduates

Intra-cluster correlations indicated to what extent universities were different from each other and the effect of clustered observations on sampling errors. The highest intra-cluster correlation was for *Knowledge of a second language* both as importance (0,2979) and achievement (0,2817). The next highest two were *Elementary computing skills*-Achievement (0,2413) and *Ethical commitment*-Importance (0,1853). From the list of items regarding importance, 21 out of 30 showed intra-cluster correlations lower than 0.1 and from the list of items regarding achievement the proportion went to 10 out from 30. Results seemed consistent: when graduates rated universities, they seemed to be more in terms of achievement than importance.

Means for all items were calculated taking into account the intra-cluster correlation using multilevel models for each item with no explanatory variables and allowing a random intercept for each level. At this stage three levels were considered: country, university and final respondent. Therefore the intercept in the model yielded the mean for each item with adequate estimates of the sampling error for each estimate..

Employers

For the data collected from employers a similar analysis was performed. Multilevel modelling showed that the country effect —employers belonging to same country— seemed stronger than the university effect —employers belonging to same university in the data collection process—

compared to graduates as it would be expected. Means for all items were again calculated using multilevel models as it was done before.

Comparing graduates and employers

Importance ratings for Graduates and Employers were compared using again multilevel modelling adding a parameter to the model accounting for the difference between both groups. Thirteen items showed a significant difference (<0,05). The highest difference corresponded to Ethical commitment with Employers rating this item higher than graduates.

It is interesting to note that employers rate Ability to work in an interdisciplinary team significantly higher than graduates while in the case of Ability to work autonomously the case is just the opposite graduates rating this item higher than employers. These results are shown in Table 2

Table 2
Significant differences in importance items. Employers vs. Graduates

Label	Description		Difference Employers vs. Graduates	%
imp28	Ethical commitment	Employers higher than Graduates	0,3372	0,00%
imp20	Ability to work in an interdisciplinary team		0,1463	0,00%
imp27	Initiative and entrepreneurial spirit		0,0979	0,07%
imp17	Teamwork		0,0957	0,04%
imp29	Concern for quality		0,0838	0,11%
imp25	Ability to work autonomously	Graduates higher than Employers	-0,1591	0,00%
imp8	Elementary computing skills		-0,1559	0,00%
imp9	Research skills		-0,1104	0,09%
imp3	Capacity for organisation and planning		-0,0900	0,04%
imp5	Grounding in basic knowledge of the profession		-0,0822	0,62%
imp11	Information management skills		-0,0739	0,35%
imp15	Problem solving		-0,0554	1,80%
imp16	Decision-making		-0,0552	3,51%

If the rankings of importance items obtained from each group were compared some interesting patterns were observed. This comparison was obtained joining Tables 3 and 6 as shown in Table 3.

Table 3
Importance items ranking. Employers vs. Graduates

Graduates		Employers	
Label	Description	Label	Description
imp1	Capacity for analysis and synthesis	imp10	Capacity to learn
imp15	Problem solving	imp2	Capacity for applying knowledge in practice
imp10	Capacity to learn	imp1	Capacity for analysis and synthesis
imp25	Ability to work autonomously	imp15	Problem solving
imp11	Information management skills	imp29	Concern for quality
imp2	Capacity for applying knowledge in practice	imp17	Teamwork
imp8	Elementary computing skills	imp13	Capacity to adapt to new situations
imp13	Capacity to adapt to new situations	imp11	Information management skills
imp18	Interpersonal skills	imp18	Interpersonal skills
imp3	Capacity for organisation and planning	imp14	Capacity for generating new ideas (creativity)
imp29	Concern for quality	imp6	Oral and written communication
imp6	Oral and written communication	imp25	Ability to work autonomously
imp30	Will to succeed	imp3	Capacity for organisation and planning
imp17	Teamwork	imp30	Will to succeed
imp16	Decision-making	imp16	Decision-making
imp14	Capacity for generating new ideas (creativity)	imp12	Critical and self-critical abilities
imp12	Critical and self-critical abilities	imp8	Elementary computing skills
imp21	Ability to communicate with experts in other fields	imp20	Ability to work in an interdisciplinary team

Graduates		Employers	
Label	Description	Label	Description
imp5	Grounding in basic knowledge of the profession	imp27	Initiative and entrepreneurial spirit
imp4	Basic general knowledge	imp21	Ability to communicate with experts in other fields
imp20	Ability to work in an interdisciplinary team	imp4	Basic general knowledge
imp27	Initiative and entrepreneurial spirit	imp28	Ethical commitment
imp26	Project design and management	imp5	Grounding in basic knowledge of the profession
imp7	Knowledge of a second language	imp26	Project design and management
imp9	Research skills	imp19	Leadership
imp23	Ability to work in an international context	imp7	Knowledge of a second language
imp19	Leadership	imp23	Ability to work in an international context
imp28	Ethical commitment	imp22	Appreciation of diversity and multiculturality
imp22	Appreciation of diversity and multiculturality	imp9	Research skills
imp24	Understanding of cultures and customs of other c.	imp24	Understanding of cultures and customs of other c.

The correlation between both rankings was quite strong *(Spearman correlation = 0.899)* and showed some common groups of items at both extremes of the ranking. In order to create a combined ranking, groups of items were created for both graduates and employers so that any pair of items in the same group showed non significant difference in the importance rating mean. In this manner ten groups were created in the graduates ranking and seven in the employers ranking. Each item received the mean rank of the group in which it was included and finally the mean was calculated for each item using the mean rank of the graduates list and the mean rank of the employers list. This procedure created a ranking of eighteen levels where some of the items were tied (Table 4) which perhaps seemed like a more adequate manner to present final results when such groups were to be compared.

Table 4
Combined ranking. Graduates & Employers

Label	Description	Combined ranking
imp1	Capacity for analysis and synthesis	1
imp10	Capacity to learn	
imp15	Problem solving	
imp2	Capacity for applying knowledge in practice	2
imp13	Capacity to adapt to new situations	3
imp29	Concern for quality	
imp11	Information management skills	4
imp25	Ability to work autonomously	
imp17	Teamwork	5
imp3	Capacity for organisation and planning	6
imp6	Oral and written communication in your native language	
imp18	Interpersonal skills	
imp30	Will to succeed	
imp14	Capacity for generating new ideas (creativity)	7
imp8	Elementary computing skills	8
imp16	Decision-making	9
imp12	Critical and self-critical abilities	10
imp20	Ability to work in an interdisciplinary team	11
imp27	Initiative and entrepreneurial spirit	
imp4	Basic general knowledge	12
imp5	Grounding in basic knowledge of the profession	
imp21	Ability to communicate with experts in other fields	
imp28	Ethical commitment	13
imp7	Knowledge of a second language	14
imp26	Project design and management	
imp9	Research skills	15
imp19	Leadership	
imp23	Ability to work in an international context	16
imp22	Appreciation of diversity and multiculturality	17
imp24	Understanding of cultures and customs of other countries	18

Academics

The academics were asked to rank seventeen items selected from the thirty item list given to graduates and employers. Some respondents reported that it was difficult to give a specific ranking to certain items as they seemed equally important. The adequacy of ranking versus weighting in this context is debatable and the difficulty has been well understood. This is often the case when a long list of items has to be ranked but it is clear that given that all academics faced this same difficulty —and therefore some of the positions in the ranking were given somehow at random within a specific range— aggregate results should show this same close positions in the final ranking.

A numerical variable was created for each item assigning seventeen points if the item was ranked in the first place, sixteen if it was ranked in the second place and so on. The mean of this variable for each item was estimated again by multilevel modelling as it is shown in Table 5. This displays the items in descending order and therefore creating again a ranking of items. Given that the order was given just by the estimation, the mean differences between items were analyzed in order to find if differences were significant. In this manner eight different groups of items were created so that any possible pair of means in the group showed no significant difference. Within each group the ranking of items could be considered interchangeable to some extent.

Table 5
Academics

Label	Description	Mean	StdErr	Item groups
imp4	Basic general knowledge	12,87	0,1906	1
imp1	Capacity for analysis and synthesis	12,70	0,3168	
imp10	Capacity to learn	12,23	0,2313	2
imp14	Capacity for generating new ideas (creativity)	11,47	0,1907	3
imp2	Capacity for applying knowledge in practice	11,00	0,3266	

Label	Description	Mean	StdErr	Item groups
imp12	Critical and self-critical abilities	10,14	0,3035	4
imp13	Capacity to adapt to new situations	9,88	0,2894	
imp5	Grounding in basic knowledge of the profession	9,01	0,3685	
imp6	Oral and written communication in your native language	8,81	0,2821	5
imp20	Ability to work in an interdisciplinary team	8,51	0,1829	
imp9	Research skills	7,67	0,3107	6
imp16	Decision-making	7,25	0,2389	7
imp28	Ethical commitment	7,01	0,2844	
imp18	Interpersonal skills	7,00	0,3124	
imp7	Knowledge of a second language	6,90	0,3239	
imp8	Elementary computing skills	5,64	0,1816	8
imp22	Appreciation of diversity and multiculturality	5,30	0,2681	

In order to compare the academics ranking to the previous ones, the thirteen items not present in the academics list were deleted from the graduates, employers and combined graduates-employers rankings and these rankings were reconstructed using seventeen ordered positions. The result is shown in Table 6.

Table 6
Rankings

Label	Description	Academics	Graduates	Employers	Grad & empl.
imp1	Capacity for analysis and synthesis	2	1	3	1
imp2	Capacity for applying knowledge in practice	5	3	2	3
imp4	Basic general knowledge	1	12	12	12

Label	Description	Academics	Graduates	Employers	Grad & empl.
imp5	Grounding in basic knowledge of the profession	8	11	14	13
imp6	Oral and written communication in your native language	9	7	7	5
imp7	Knowledge of a second language	15	14	15	15
imp8	Elementary computing skills	16	4	10	8
imp9	Research skills	11	15	17	16
imp10	Capacity to learn	3	2	1	2
imp12	Critical and self-critical abilities	6	10	9	10
imp13	Capacity to adapt to new situations	7	5	4	4
imp14	Capacity for generating new ideas (creativity)	4	9	6	7
imp16	Decision-making	12	8	8	9
imp18	Interpersonal skills	14	6	5	6
imp20	Ability to work in an interdisciplinary team	10	13	11	11
imp22	Appreciation of diversity and multiculturality	17	17	16	17
imp28	Ethical commitment	13	16	13	14

The most striking difference was that academics ranked Basic general knowledge in the first position of the list (although it should be remembered that it showed no significant difference compared to the second ranked: Capacity for analysis and synthesis) while both graduates and employers ranked this same item in the twelfth position.

Spearman correlations are presented in Table 7 showing that employers and graduates rankings were more similar among them than the academics ranking. Compared to graduates, most relevant differences were: Elementary computing competences (fourth position for graduates and sixteenth for academics) and Interpersonal competences (sixth for graduates and fourteenth for academics). Compared to employers, most relevant difference was again Interpersonal competences (fifth for employers and fourteenth for academics).

Table 7
Spearman correlations

Academics	1			
Graduates	0.45588	1		
Employers	0.54902	0.89951	1	
Graduates & Employers	0.55147	0.95098	0.97304	1

Country Effects

Multilevel modelling allows the estimation of what could be considered a country effect, this is, a measure of the effect of the country as a whole on respondents. This effect was measured on the *thirty importance items* rated by graduates. The country effect was classified in three groups: strong effect (there are strong differences between countries), mild effect (the differences are weaker) and no effect (all countries seem to be equal). This classification is shown the following table.

Table 8
Country effects

Label	Description	
imp7	Knowledge of a second language	STRONG
imp25	Ability to work autonomously	
imp30	Will to succeed	
imp2	Capacity for applying knowledge in practice	
imp29	Concern for quality	
imp27	Initiative and entrepreneurial spirit	
imp20	Ability to work in an interdisciplinary team	

Label	Description	
imp9	Research skills	MILD
imp4	Basic general knowledge	
imp14	Capacity for generating new ideas (creativity)	
imp28	Ethical commitment	
imp26	Project design and management	
imp22	Appreciation of diversity and multiculturality	
imp13	Capacity to adapt to new situations	
imp12	Critical and self-critical abilities	
imp5	Grounding in basic knowledge of the profession	
imp19	Leadership	
imp17	Teamwork	NO EFFECT
imp16	Decision-making	
imp18	Interpersonal skills	
imp21	Ability to communicate with experts in other fields	
imp15	Problem solving	
imp10	Capacity to learn	
imp1	Capacity for analysis and synthesis	
imp6	Oral and written communication in your native language	
imp11	Information management skills	
imp23	Ability to work in an international context	
imp3	Capacity for organisation and planning	
imp8	Elementary computing skills	
imp24	Understanding of cultures and customs of other countries	

Some conclusions and open questions

One of the initial objectives of the Tuning Project was to promote debate and reflection on competences at the *European level*, from a *university perspective* and from a *subject area approach*, offering a *way forward*. This level of reflection and the development of competences in the definition and development of university degrees in Europe was varied according to traditions and educational systems.

It is important to note that in Tuning competences are always linked with knowledge since it is understood that they can not be developed without learning in some field or discipline. In this context and from the work and the debate done by the Tuning members, a number of conclusions can be drawn, while significant questions remain open to be dealt with in future work.

1. With regard to the *relevance of the use of competences:*

- The development of competences fits in well with *the paradigm of primarily student-centred education.* It emphasizes that the student, the learner is the focus, and thus brings into discussion the changing role of the teacher. This could be regarded as moving towards more of an accompanying role, guiding learning towards the attainment of particular well-defined objectives. It consequently affects the approach to educational activities and the organization of learning, which is shifting to being guided by what the learner needs to achieve. It also affects assessment in terms of shifting from input to output and to the processes and the contexts of the learner. However, how the competences were to be worked, realized and assessed and the impact of this change, both at individual level and at the level of European university structures, required further reflection and debate.
- The *definition of academic and professional profiles* in degrees is intimately linked with the identification and development of competences towards their attainment throughout the curricula. To reach this aim, the work of isolated academics is not sufficient, it needs to be approached in a transversal way through the curricula of a particular degree program.
- *Transparency and quality* in academic and professional profiles are major assets in relation to both employability and citizenship, and the enhancement of quality and consistency as a joint effort should be a priority for the European Institutions. The definition of academic and professional profiles and the development of the fields of required competences, add quality in terms of focus and transparency, purpose, processes and outcomes. In this context, the use of the language of competences at the level of the Diploma Supplement would be a quality step along both fronts.
- The use of competences (including knowledge) and the *emphasis on outputs adds another important dimension* to balance the weight

given to the length of study programmes. This is particularly relevant for lifelong learning.

- In relation to the creation of the *European Higher Education Area*, the joint reflection, debate and attempts to define subject area competences as dynamic reference points could be of crucial importance for the development of easily readable and comparable degrees and for the enhancement of mobility, not only of students, but particularly of graduates and professionals.

2. In relation to the practice of *consultation with social groups* before elaboration or reformulation of degree programmes, the Tuning members have observed a variation among the European Universities in the levels at which this practice is carried out. Also they observe a significant variety in the methods used for this consultation. In this respect, the Tuning members agree that the practice of consulting relevant social and professional groups is crucial and should be encouraged using the most appropriate form and manner in each case.

   - In the case of Tuning, the groups consulted were relevant groups: *graduates, employers, and academics.* Obviously, other groups could also have been consulted.

   - The Tuning members also agree that *joint reflection from the Universities based on updated data* is important in the development of adequate degrees. They recognize that students need and demand qualifications which they can use effectively for the purpose of their studies and careers all over Europe. These demands are not only a reflection on what local social and professional groups value and demand from their programmes but also the perspective of broader trends taking place at the European level.

3. It is important to remember that *subject-related competences are crucial* for identification of degrees, for comparability and for the definition of first, second and third degree cycles. These competences have been analyzed individually by the subject area groups. The identification and discussion of a set of subject-related competences for the first and second cycle could be considered one of the major contributions of the project towards the development of European points of reference.

4. With regard to *generic competences* in a changing society where professional profiles need to be well defined while keeping a dimension

of openness to change and adaptation, some messages from graduates and employers to European Universities can be identified:

—In relation to the *importance* given to different competences, the messages from graduates and employers were of crucial relevance:

- In fact, one of the most striking results of the questionnaire was the very high degree of correlation between the opinion of graduates and employers in relation to the importance and rank given to the different competences. These two groups were of the opinion that the most important competences to be developed were: capacity for analysis and synthesis, capacity to learn, problem solving, capacity for applying knowledge in practice, capacity to adapt to new situations, concern for quality, information management skills, ability to work autonomously and teamwork.

- Looking at the other end of the scale (least important competences), there appeared: understanding of cultures and customs of other countries, appreciation of diversity and multiculturality, ability to work in an international context, leadership, research skills, project design and management, and knowledge of a second language. One striking aspect was the concentration of the «international» competences in the lower part of the scale with respect to importance. Perhaps these are emerging issues and the importance will come about in the future.

- The scale of appreciation of the graduates and employers also had a high degree of coincidence with the ranking by the *academics* with a few exceptions:

- The first exception is the rank given to *basic general knowledge,* which for the graduates and employers showed a level of 12 out of 18 wheras for the academics it appeared in first place. One point to note is that responses to questions involving the word *basic* may depend on the interpretation given to this word, which could change depending on the inclusion of questions referring to *advanced* knowledge.

- The second item of difference was *elementary computing skills.* This varied between groups, being considered more important by graduates, less by employers and least by academics.

- The third was *interpersonal skills* with much higher importance attached to it by graduates and employers (level 6) than by academics where it appeared in a considerably lower position. In general,

all the interpersonal skills tended to rank lower for academics than for graduates and employers. The majority of the competences which appeared at the top of the scale both in terms of importance and achievement were instrumental and systemic.

—In relation to *achievement* in terms of the competences that the universities were considered to develop at the highest level, again there was a high level of correlation between the employers and the graduates. However, in this respect reference is only made to the *graduates* since it is considered that these would have the most accurate perspective on the level of achievement for a particular university.

- The items which appear highest in the scale, in the opinion of the graduates were: capacity to learn, basic general knowledge, ability to work autonomously, capacity for analysis and synthesis, information management skills, research skills, problem solving, concern for quality and will to succeed. Six of these items coincided with those that graduates and employers considered important and ranked highest in the scale. The remaining reflect the tasks which the universities have traditionally been performing for centuries.

- Looking at the bottom of the scale, the competences to be found there were: leadership, understanding of cultures and customs of other countries, knowledge of a second language, ability to communicate with experts in other fields, ability to work in an international context, and ability to work in an interdisciplinary team. It is remarkable that these competences all appear near the bottom of the table for importance, so again a high degree of consistency.

Finally, with regard to the variation of ranking and the impact by *country*, there were 13 items where there was no variation at all. Among them there were three of the competences which appeared at the top of scale and also two of those at the bottom. Seven items showed a significant country effect. They seem to relate to educational traditions and cultural values.

However, in relation to the issue of generic skills, several questions remain open. These include: is there a core of generic skills which may be identified as essential for each level? How many could be developed in a degree programme? Should the choice of competences be based on the different degrees or should they be characterised by institutional choic-

es and institutional strengths? Who should be responsible for them? Which are the most adequate methods for developing them through the curricula? What is the rate of change developing in the five years gap since the first and the last graduates would have finished their degree programmes. Are there generic competences which relate to emerging needs and show the importance of looking at the future and try to anticipate developments, etc, etc.

Other more general *open questions* for further study and reflection relate to employment potential for graduates, the gaps between importance and achievement in a more detailed way and starting from closer to the institutional level, the emerging needs of society, and future demands, and the changing nature of learning as it needs to take place in a variety of contexts.

These are only some conclusions of a joint reflection at European level on the potential that competences have in the creation of the European Higher Education Area and in the enhancement of Higher Education as a whole.

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4. ECTS, student workload and learning outcomes

4.0. Introduction

In an accumulation and transfer system, credits and learning outcomes, expressed in terms of competences are inseparably linked. They are the two sides of the same coin. While credits express the volume of learning, learning outcomes express the content of that learning. Credits are only awarded when the learning outcomes are achieved by the learner. However, in general terms there is not a one to one relationship between credits and learning outcomes. The time required for the average learner or typical student to achieve the learning outcomes is decided not only by the volume of knowledge and skills to be taught and learned but also by the context in which the process of learning takes place. A countries' culture of learning, the institution, the organization of teaching, learning and assessment as well as the qualities and level of students are decisive elements in how much time the average learner will need to achieve the learning outcomes. Student time required in the given context, expressed in terms of workload, decides the number of credits. It shows at the same time that learning outcomes are in practice limited by the number of credits available for a unit as part of a study programme. In other words: learning outcomes and credits (should) keep each other in balance. In this respect, the calculation of credits is of crucial importance. Tuning offers an approach and gives examples of good practice how this calculation can be done in practice.

As an illustration of the complex relationship between credits and learning outcomes, the following example is given. This example is derived from the Common European Framework of References for Languages. In this framework different levels from A1 (very basic) to C2 (near native) are distinguished. These levels are described in learning outcomes expressed in terms of competences. Tuning states that for different groups of learners the workload (and therefore the number of credits required) will differ to obtain the same level of a competence. A typical French higher education student might need 30 ECTS-credits to achieve a competence of Spanish at level C1, while a typical Dutch student might require 60 ECTS-credits to achieve the same level. This difference

is related to the fact that the starting conditions and context for the two students are different: for a Dutch student it will be easier to learn another Germanic language while for a French student it will be easier to learn another Romance language. As stated before, the effectiveness of learning and teaching pathways might also influence the amount of credits required to achieve a set of learning outcomes. In other words, the example shows that we can not say in an arbitrary way that the C1 learning outcome equals an x amount of credits for all learners regardless their context. The x will be different for every country and might differ from provider to provider, depending on the effectiveness of the learning process.

Tuning differentiates between learning outcomes and competences. This distinction is made to show the different roles of teaching staff and students or learners. Learning outcomes are formulated by staff on the level of a study programme as well as single course or learning units. Competences are obtained by the learner. The level of competences obtained by the learner can be lower or higher than determined by the learning outcomes. The level of competences obtained is expressed in a mark or grade. Competences are not linked to one unit, but are developed during the total learning process of a study programme.

In practice two types of learning outcomes are used: so-called threshold learning outcomes, which determine the pass level, and so-called desired learning outcomes. Desired learning outcomes express what the teaching staff expects from the typical learner in terms of the level of competences to be obtained. Tuning has a preference for the concept of desired learning outcomes, because —at least at present— it seems to fit better in the teaching and learning culture of the vast majority of European countries.

4.1. Educational structures, learning outcomes, workload and the calculation of ECTS credits

Introduction

This paper aims to offer more insight into the relation between educational structures, workload, credits and learning outcomes. The starting point is to recognise that in general the design and the implementation of a course of study leading to a recognised qualification or degree is based on a number of elements of which we mention here the following:

a) The set of «intended» learning outcomes;

b) The total number of credits required and its distribution over the several activities (such as the teaching/learning units; the thesis work, the comprehensive examination, etc.) involved in the qualification;

c) The actual academic contents offered to the students;

d) The teaching/learning methodologies and traditions appropriate to each institution.

This paper focuses on the concept and role of credits, trying to highlight their connections with learning outcomes and with other factors mentioned. Indeed the tuning process requires a clear definition of the concepts connected to credits, learning aims/objectives and results. This makes it necessary to reach greater clarity and knowledge concerning the following items:

1. The role of credits
2. Allocation of credits to courses
3. Overall curriculum designing
4. Credits and level
5. Calculation of credits in terms of workload
6. Comparison of length of academic years in Europe
7. Relation between workload, teaching methods and learning outcomes

It need not be stressed that all the topics mentioned are interrelated.

It also must be mentioned here that higher education has changed considerably during the last half century. A more socially oriented approach has

gradually replaced the Humboldtian one. Forms of instruction designed for a numerically limited elite have developed into mass education systems. At the same time, the traditional and necessary link between university teaching and research has been put under pressure. During the last decades, education has followed the general tendency towards internationalisation. More than ever before, students are convinced that pursuing their studies at least partly abroad is in their interest. International mobility of a part of the labour force has become a reality. It is evident that, as the percentage of the population with university qualifications increases, and as models of employment and career become more flexible, the current tendency to intersperse academic study and work may increase. Moreover, the emphasis on continuing professional development, involving all parts of universities and virtually every subject area, will become increasingly significant. The changing demands of the educational market-place make it appropriate to consider how continuing professional development, in the context of lifelong learning, can be accommodated within an on-going qualification framework. A system of credits for such study and achievement, which can be widely recognised in a mobile labour force and eventually lead to recognised qualifications will be demanded. ECTS provides a vehicle which, as indicated elsewhere in this paper, is already widely understood and accepted and which will prove adaptable to the new needs as well.

ECTS : European Credit Transfer and Accumulation System

1. The European Credit Transfer System

The European Credit Transfer System (ECTS) has been developed over the past thirteen years, and today is the most commonly used basis for measuring student workload in European higher education. Other —less widely used— credit systems are based on various criteria such as the importance of a subject or the number of contact hours in a course; ECTS credits describe only student workload in terms of time employed to complete a course or a course unit. This represents an approach to European learning and teaching which places the student at the centre of the educational process.

ECTS was originally tested and perfected as a transfer system in order to make it possible for Universities in different European countries to describe

the amount of academic work necessary to complete each of their course units and hence to facilitate recognition of students' work performed abroad. In order to create a common basis for reciprocal understanding, at the beginning (1988) the assumption was made that a complete year's work in any European higher education institution for the students of the country itself was —by definition— equivalent to 60 ECTS credits. Credits were allocated, for the purpose of transparency in description, to each assessed (i.e. marked or graded) activity on the basis of a judgement as to the proportion it represented of the complete year's workload. Hence credits were allocated on a relative basis.

ECTS was not just credits: it also aimed at creating a simple and accurate means of communication between higher education institutions, faculties, departments, staff and students in order to facilitate reciprocal knowledge, understanding and trust. Standard forms were created: the ECTS Application Form, the Learning Agreement and the Transcript of Records. Full information about these tools can be found on the Europa server at www.europa.int.eu/comm/education/socrates/ects.

2. The European Credit Transfer and Accumulation System

In several countries ECTS or analogous national systems are used as official accumulation systems. This means that entire courses of study leading to recognised qualifications are described using ECTS credits. The basis for allocation of credits is the official length of the study programme: for example the total workload necessary to obtain a first cycle degree lasting officially three or four years is expressed as 180 or 240 credits. The single course units which must be taken to obtain the degree each can be described in terms of workload and hence of credits. Credits are only obtained when the course unit or other activity has been successfully completed and assessed (i.e. marked or graded).

When ECTS is used as an accumulation system certain rules apply. Credits measure only workload. They do not measure quality of performance, contents or level. These elements are described in other ways. The workload of any official learning activity completed can be expressed in credits and can be placed on a student's transcript of records. However credits can only be applied to completion of a recognised qualification when they constitute an approved part of a study programme.

When ECTS or analogous credit systems become official, credits receive absolute and no longer relative value. That is to say, credits are no longer calculated on an ad hoc proportional basis, but on the basis of officially recognised criteria. We should note that national credit accumulation systems based on ECTS principles allow not only national transfer, evaluation and recognition of work performed but also international transfer — always in the respect of the principles of clarity which are the foundation of ECTS.

Furthermore we may note that as more and more countries adopt systems compatible with the Bologna declaration/Prague communiqué there has been a convergence and consensus around ECTS credits as a common measure of student time. In practice 1 ECTS credit is equal to roughly 25-30 hours of student work (that is, including contact hours, independent or guided study, etc.)

3. ECTS today

As we can see, ECTS in thirteen years has developed from a pioneering system of communication between very different European systems and structures into a consolidated and expanding official system which is one of the foundations for the development of a European higher education area. It originally facilitated international student mobility and made possible an increase in reciprocal knowledge of study programmes especially designed for full-time students.

As ECTS develops into a Europe-wide accumulation system it also will be an essential tool for the development of other, more flexible kinds of higher education: part-time studies, recurrent study periods and in general what today is known as «lifelong learning»: that is, ECTS is a necessary tool for measuring and describing the many learning activities that European citizens will be increasingly engaged in during all periods of their life.

ECTS credits today are increasingly used as a tool for designing curricula. Because they express student workload measured in time, they allow higher education institutions to plan the most effective way to achieve desired results within the time constraints of the length of their degree programmes. ECTS credits also provide a useful means for monitoring results and improving teaching/learning performance. ECTS also facilitates student and teacher mobility by providing a common currency and transparency on content and weight of course material and information on assessment methods.

The role of credits

ECTS

During the period 1989-1995 the European Commission developed the *European Credit Transfer System (ECTS)*, in close collaboration with some 145 higher education institutions. The intention of this system was to come up with a tool that would make it possible to compare periods of academic studies of different universities in different countries. Such an instrument was thought necessary to improve the recognition of studies completed abroad. ECTS was intended to be a transfer system, to connect the different higher education systems and structures of the countries in Europe. As a transfer system, based on general assumptions concerning workload and information and on a philosophy of mutual trust and confidence, it worked well.

Indeed the strength and attraction of ECTS is and was:

—its simplicity;

—its overarching capability of bridging educational systems on a national as well as on an international basis.

It was agreed, from the very start, that study periods completed successfully at other institutions should only be recognised on the basis of prior agreements between academic staff about *level, content* and *load* of course units.

Relative and absolute value of credits

In the information material which was distributed about the European Credit Transfer System (ECTS), it is stated that *credits allocated to courses are relative values reflecting the quantity of work each course demands in relation to the total quantity of work required to complete a full year of academic study at a given institution*. The question of whether this approach is not too simple must now be raised. Especially the expression «relative value» related to «a full year of academic study» requires more attention. During the development phase it was not possible to define credits univocally as relative value in all situations. This seemed due to a large extent to the fact that a number of countries were not acquainted with credit systems. At that time Italy and Germany were identified as the two countries with most difficulties in applying the system.

Germany, because it did not have a clearly described study programme for many disciplines, and Italy because there did not seem to be a real relation between the official and actual length of study programmes. Therefore the term «relative value» was given a different meaning in different countries and circumstances. Sometimes credit allocation was based on the official length of the programme and sometimes on the unofficial length, that is the average amount of time necessary to finish the programme successfully in practice. In the countries where a credit system based on the idea of workload already existed, the official length was taken as a starting point for the allocation of credits. In these cases «relative value» actually became «absolute value» in each context.

It is foreseen that in the near future most European countries, and institutions in those countries, will introduce credit systems based on the notion of workload as in ECTS. By doing so credits will be given an «absolute value» in these countries too. This does not mean that the number of hours of workload of a credit will be exactly the same on a national or an international level. The actual lengths of study periods in an academic year differ from institution to institution and from country to country. This poses no problems as long as the differences are kept within certain limits. We will come back to this issue later.

Types of programmes

Sometimes a distinction is made between *regular programmes* and *extra challenging programmes*. The latter programmes are intended for very bright students[3]. In both cases the prescribed study programme should be based on the assumption that an academic regular year counts a total number of 60 credits. This makes clear that although credits always represent workload and are only given on the basis of successful assessment,

3. Three different meanings seem fit to the words «extra challenging programmes». They are:
1. Normal programs can be squeezed by brilliant students who can then gain more than 60 credits in a single academic year
2. In some places, i.e. at Oxford and Cambridge, Ecole Normale in Paris, Scuola Normale in Pisa, the students have to attend extra-curricular lectures/activities/etc.
3. A student can substitute in his study curriculum some less challenging credits with other (equal in number) credits which are more challenging: a student can reach a higher level in the same period of time, without getting more ECTS credits (e.g. in programmes that skip details that would appear in a normal programme). Level is not determined by the number of credits.

the standard of the work, i.e. the performance achieved by the student in order to gain them, may be different. This follows from the fact that there are not only different types of education (i.e. teaching and learning methods/traditions), but also different learning performances within the same type of education. In other words, as far as the credits are concerned, the actual *recognised qualification* defines how many credits (as a whole) and how many single increments or «bits» of credits (through the «modules» or teaching/learning blocks) a student receives. Credits per se have only one dimension: workload, but —in the Diploma supplement, Transcripts of Records, etc.— they accompany and are accompanied by other indications, such as (host) institution, degree programme, level, contents, quality of performance (i.e. grading), etc. For the sake of clarity, the focus of this paper is on the typical student who takes a regular degree programme.

ECTS as an accumulation system

As stated, credits are *not* an entity in themselves, but always describe work completed which is part of a curriculum. If we refer to a credit accumulation system, we mean a system in which credits are accumulated in a coherent programme of studies. In this respect a credit is a *unit* which reflects a certain amount of work successfully done at a certain level for a recognised qualification. Therefore, credits are not interchangeable automatically from one context to another. Admission officers *always* have to evaluate work done (credits awarded) at a different educational institution, whether abroad or not, before it can be included in their own degree programme. ECTS as an accumulation system facilitates the recognition of such credits. By evaluating, the total of course work done should be taken into account to avoid course to course comparison. This method of academic recognition of work taken elsewhere has been established as a basic rule in the past decade within the ECTS framework. ECTS is suitable as an accumulation system because it is based on this concept of context-related credits and recognition by the institution which ultimately awards the degree.

As said, until now the transfer aspect of ECTS has been stressed, but in the future certainly the focus will shift to the accumulation aspect of ECTS. It will constitute one of the mechanisms necessary to deal with the developments in higher education and the labour market.

In this perspective it is in the interest of the higher education sector to develop ECTS into a reliable accumulation system for academic studies. In the first decade of its existence the right conditions for such a step

were lacking. However, especially in the last three years, changes have taken place in European higher education policies which have created the possibilities and underlined the necessity for a European accumulation system. The *Sorbonne Declaration* (1998), the *Bologna Declaration* (1999) and the *Prague Communiqué* (2001) on the one hand and the reforms taking place in a number of countries on the other, are clear expressions of this. They follow the idea of a European framework of an open market, free exchanges of persons and goods and one economic area. Therefore, an accumulation system is now considered to be one of the preconditions for the tuning of educational structures in Europe.

In practice, the transfer of credits and the accumulation of credits are two sides of the same coin. During recent years it has often been suggested that the abbreviation 'ECTS' be changed to include the accumulation aspect. It has been decided not to do so in order to avoid confusion. ECTS has become a well-known trademark during the last decade in Higher Education, which reflects a unique methodology of academic recognition. This methodology includes both transfer and accumulation. After all, ECTS requires that credits be allocated to all courses in all programmes. The basic idea of ECTS is that recognition is not realised on the basis of course to course comparison, but by recognising periods of studies at a comparable level and content in a more flexible way.

Credits and the length of a degree programme

Since the *Sorbonne Declaration* (1998) and the *Bologna Declaration* (1999) the discussion about credits has received a new impulse. Not only have more countries decided to introduce a national credit system —which in nearly all cases coincides with ECTS— but also a debate has been initiated about the structure in cycles of the higher education sequence and about the desired length of the study programmes. A consensus appears to have developed in Europe about the following general structure:

- First cycle or undergraduate: 180-240 credits (see the conclusions of the Helsinki conference 2001, where a general consensus was achieved on this range of lengths, later on confirmed by the Salamanca Convention)
- Second cycle or (post)graduate (the required length is subject of discussion)
- Third cycle or doctoral (3 to 4 years;180 to 240 credits)

Allocation of credits to courses

Student workload

ECTS was designed as a credit system based on student workload. This was in accordance with developments in the 1980s in a number of EU countries like in Scandinavia, the Netherlands and the United Kingdom. In those countries the (national) credit systems were set up as accumulation systems. ECTS could therefore be easily implemented. In other countries, which had based their teaching systems on the number of contact or teaching hours, implementation proved to be much more complicated. Initially, in these countries the following approach was mostly used: Allocation of credits to courses was based on the number of teaching hours for each course unit. This approach is based on the assumption that the number of teaching hours reflects more or less the workload involved for the student. However, in practice this is not always the case. Experiences in Italy and Spain, for example, show that in the long run this approach is not satisfactory. The same teaching load may correspond to different student workloads. In a number of countries the situation is complicated by the fact that the contents of the curricula to a large extent are decided at central government level: there is a fixed list of subjects which has to be taught. This approach leads to rather rigid course structures and a fair allocation of credits becomes problematic.

Some countries, which have taken workload —in terms of the quantity of student work rather than teaching hours— as the basis for allocation, have met other kinds of problems. In a number of cases misunderstandings occurred about the relation between the importance of a topic and the number of credits to be allocated to a course unit. It proves difficult, in practice, to make clear that the complexity or importance of a topic *as such* is **not** the basis for credit allocation. Credits depend only on the amount of time it takes to learn the subject matter and to complete the course unit successfully.

Student-oriented versus teacher-oriented programmes of studies

Discussions of this nature reflect a different emphasis on teaching and learning. Educational systems can be described as being more teacher-oriented or more student-oriented. The teacher-oriented approach is generally time independent, based on the assumption that the proper object of study is what the individual professor thinks the student should learn in his

or her course. The student-oriented approach gives greater weight to the design of the overall curriculum and focuses especially on the usefulness of study programmes for a future position of the graduate in society. With respect to this latter approach a correct allocation of credits as well as a sensible definition of learning outcomes play a decisive role.

Until recently most systems in use were teacher oriented. There is now a tendency however to give greater attention to the obstacles encountered by a *typical* student in finishing his or her studies in time. Student workload is acknowledged to be a crucial factor and educators recognise that there is a tension between what a student *should learn* and *is able to learn* in a given period of time. In particular, when determining the number of credits required for a particular set of learning outcomes and degree programme specifications, allowance must be made for differing prior knowledge, skills and competences, acquired before entering university. Different assumptions about these prior factors are made in different countries because of differences in the architecture of secondary school education.

Overall curriculum designing

Role of desired learning outcomes

In the quantitative framework assured by the use of credits, it would seem beneficial to develop course programmes on the basis of desired learning outcomes. Learning outcomes can be defined as statements of what a learner is expected to know, understand and/or be able to demonstrate after completion of a learning programme.[4] Experience with this approach has been recently built up by the *Quality Assurance Agency (QAA)* in the United Kingdom and the method is also known but less widely used in most other European countries.

By designing programmes in this way, more transparency and coherence can be achieved. This approach makes it possible to develop cumulative programmes, with specific entrance requirements for each of the cycles, the study years and levels as well as the course units.

The learning outcomes foreseen for the first cycle and the second cycle must be clearly distinguished. Although the final outcomes and the com-

4. Compare the report *Credit and HE Qualifications. Credit Guidelines for HE Qualifications in England, Wales and Northern Ireland,* published in November 2001 by CQFW, NICATS, NUCCAT and SEEC.

petences to be acquired should be discipline/programme related, more general objectives can be formulated also. In practice two types of learning outcomes can be distinguished:

- General competences (transferable skills)
- Subject specific competences (theoretical, practical and/or experimental knowledge and subject related skills)

Both should have a recognisable place in the course programme and should be verifiable at the end.

Generic and subject-specific competences (skills and knowledge)

When we speak of *general competences* we refer to such things as capacity for analysis and synthesis, general knowledge, awareness of the European and international dimension, capacity for independent learning, co-operation and communication, tenacity, capacity for leadership, organisational and planning abilities. In other words, we are speaking of qualities which are of use in many situations, not only those related to the specific subject area. Furthermore, most of them can be developed, nourished or destroyed by appropriate or inappropriate learning/teaching methodologies and formats.

In addition to these more general competences —which hopefully will be developed in all study programmes— each course of study will certainly seek to foster more *specific subject competences* (skills and knowledge). The subject related skills are the relevant methods and techniques pertaining to the various discipline areas, e.g. analysis of ancient scripts, chemical analyses, sampling techniques and so forth, according to the subject area.

The *subject related theoretical and practical and/or experimental knowledge* includes the actual contents, that is specific factual knowledge relating to the discipline, ways in which problems are approached and solved, knowledge of the history of the subject and of current developments within it and so forth. Here too, careful analysis must be made, in terms of definition of priorities and required levels for each kind of subject related knowledge, in order to design a satisfactory curriculum.

The same learning objectives and competences can be reached by using different types of teaching and learning methods, techniques and formats. Examples of these are attending lectures, the performing of specific assignments[5], practising technical skills, writing papers of increasing difficulty, reading papers, learning how to give constructive criticism on the work of others, chairing meetings (of seminar groups, for example), working under time pressure, co-producing papers, presenting papers, making précis or summarising, doing laboratory or practical exercises, fieldwork, personal study.

At first glance, it seems reasonable that the more general learning outcomes should be pursued in the first cycle. Some previous experience shows however that the «general» learning outcomes are to an extent subject dependent. It is suggested here that, in general, at completion of the first cycle, the student should be able to:

- show familiarity with the foundation and history of his/her major (discipline);
- communicate obtained basic knowledge in a coherent way;
- place new information and interpretation in its context;
- show understanding of the overall structure of the discipline and the connection between its sub disciplines;
- show understanding and implement the methods of critical analyses and development of theories;
- implement discipline related methods and techniques accurately;
- show understanding of the quality of discipline related research;
- show understanding of experimental and observational testing of scientific theories.

The completion of the first cycle functions as entry requirement for the second cycle. The second cycle usually is the phase of specialisation, although this is one of the possible models. The student who graduates must be able to execute independent (applied) research. It seems that, with regard to the learning outcomes of the second cycle the student should:

5. I.e. finding out about a specific topic and writing a report or an essay

- have a good command of a specialised field within the discipline at an advanced level. This means in practice being acquainted with the newest theories, interpretations, methods and techniques;
- be able to follow critically and interpret the newest development in theory and practice;
- have sufficient competence in the techniques of independent research and to be able to interpret the results at an advanced level;
- be able to make an original, albeit limited, contribution within the canons of the discipline, e.g. final thesis;
- show originality and creativity with regard to the handling of the discipline;
- have developed competence at a professional level.

Not all the mentioned learning outcomes or level indicators are of the same relevance for each discipline.

Modular and non-modular systems

For some the introduction of a credit system automatically implies the introduction of a modular system, that is, course «units» or modules, to which are allocated a «limited/reasonable number» of credits in more or less standard multiples. In practice there are many existing options and the «*multiple standard*» is not often taken into consideration. The modular system has obvious advantages, because in some countries it might prevent too much fragmentation and therefore avoids too many examinations. It also makes the transfer of credits easier. A modular system is not a precondition for overall curriculum designing, although in practice it facilitates the process. The negative aspect of a modular system is that it decreases the teaching freedom, when the amount of contact hours within the module is limited, but the positive aspect is that it increases the flexibility insofar as it becomes possible to build different curricula having points of contact between them. While in a non-modular system (i.e. when a large amount of credits is given to a course unit taught by a single teacher) the choice of the material is given priority, in a modular system it is the structure of the over-all curriculum which will constitute the primary consideration.

In any kind of system, modular or non-modular, the question of the allocation of credits can be approached from two sides: from the bottom and the top. In a bottom-up approach the course unit or building brick is the central point of attention. In that situation the position of the specific course unit within the overall curriculum is not clear. The risk involved in this approach is that teachers overestimate (or underestimate) the role of the course units they teach. This is reflected in the amount of work that a student is asked to do for a course. For students this might mean that they will not be able to use their time in the most profitable way because their total workload is too heavy (or too light).

In a top-down approach the starting point in this process is to describe the intended learning outcomes at four levels:

- the degree programme of the second cycle (MA/MSc-level);
- the degree programme of the first cycle (BA/BSc-level)
- each year/level of the study programme, e.g. first, second, third and fourth and fifth;
- each course unit (or module or teaching learning activity).

Distribution of credits

When we talk about desired learning outcomes or competences, we refer to factual knowledge, analytical skills, practical skills, etc. Special attention should be put in avoiding the inclusion of inappropriate learning outcomes (e.g. too much detailed coverage of a given topic). After the desired learning outcomes have been formulated, the next step is to decide how much time is required to reach each of these learning outcomes. This calculation is based on the estimate of what a typical student can do in a certain amount of time. In effect, this calculation and the total amount of time available[6] will probably not match. That is the moment to make compromises with regard to the level of knowledge and skills as formulated in the desired learning outcomes and the available amount of time. It will probably mean that the learning outcomes have to be adjusted. If this exercise is executed correctly, it will show how much time is available for each teaching/learning activity in the course

6. Available e.g. on the basis of the teaching/learning tradition in the given «institution + country».

programme (e.g. teaching block or module or course unit, thesis work, fieldwork, placement, comprehensive examination, etc). The credits allow calculation of the necessary workload and impose a realistic limit on what can actually be put in the whole course or in each academic year.

The total number of credits needed to complete a degree or a single academic year can be divided in various ways, in order to facilitate the definition of courses of study and of the degree of flexibility allowed. For example, the necessary credits needed to complete a degree could be divided into different categories: e.g. those pertaining to mandatory «core» courses, auxiliary courses or complementary course units or the like.

Such a distribution into categories of course will vary quite a bit from institution to institution. Indeed institutions differ greatly as to the available teaching resources and as to the preparation of their students at entrance, and hence will need to distribute credits in an appropriate way in order to optimise the use of resources and the efficacy of the teaching learning activities.

Credits and level

While there is no suggestion within ECTS that credits measure level, it is apparent that, when credits are used within an accumulation system, the rules relating to the award of a qualification generally specify not only the number of credits required for the specific qualification but also a set of sub-rules in relation to the level at which those credits must be obtained as well as the type of courses.

The Tuning project has not endeavoured to tackle the question of levels in an abstract way. Rather it has explored the issue in connection with credits and recognition at the subject area level. It is evident that institutions implementing a credit accumulation system will need to address it; and if credits are to be transferable between institutions and between member states, the issue must be addressed in a European perspective. Currently, such matters are resolved on an ad hoc basis, often utilising the NARIC network. But if larger scale use of a European credit accumulation system is to be successful, there will need to be a European understanding —or even a European-wide system— of level indicators. Moreover, developing these further indicators in conjunction with credits will be a critical factor in a system of accrediting prior learning or

prior experience. Outside the traditional university framework, it will be even more important to have such indicators so that all concerned can understand, in a transparent way, the level at which credits are being awarded. Similarly, as the pace of continuing professional development accelerates, it will be necessary to define and to describe clearly the level at which credits are allocated.

A possible path forward could be to introduce extra descriptors, which go along with ECTS as an accumulation and transfer system. A pre-condition for such a European wide system is that it should be transparent and easy to understand and to implement. The consequence is that credits will be distributed over levels and type of courses.

Of course, even before the introduction of ECTS as an accumulation system, the notion of levels existed. In nearly all cases programmes are based on some path or schemes which follow a concept of progression. Different models are in use to guarantee that rules regarding the structure of a study programme are respected. In more traditional and rigid programmes, students have to meet certain requirements to pass from one academic year to the next. In such cases the recognition of credits takes place in a fixed context in which «levels» and «years» correspond. In other cases, use is made of a system of pre-requisites to control progression. The student must take a certain course or set of courses in order to proceed to the next course unit or module or a set of these. Such progression routes are laid down in study programme and exam regulations. These regulations are decisive regarding the recognition of course units as part of the degree programme.

In recent times the notion of Life Long Learning has gained ground. This new and broader view of the learning and teaching environment will require greater flexibility regarding the recognition of prior studies and (levels of) competences obtained in other and different environments. The needs of society also suggest responding with more differentiated and therefore more flexible study programmes. Future programmes will probably be to a large extent personalized, taking into account the interests and talents of the individual student. For such flexible programmes the consolidated progression systems are no longer satisfactory. By introducing the three cycle system and linking the cycles to cycle level descriptors a substantial step has been taken towards solving the issue. In practice we speak of first cycle or bachelor ECTS-credits, of second cycle or master ECTS-credits and of third cycle or doctoral level ECTS-credits. In many countries credits can not be included in programme when they

are not of the same level. For example first cycle credits can not be recognized as part of a second cycle programme. In study programmes which allow for the limited inclusion of credits of a lower level, the discrimination between just three levels will probably not be considered satisfactory. In this, but probably in other cases too, there will be a need for so-called intermediate levels, which must also be based on descriptors.

If intermediate levels are to be defined, we might distinguish the following:

- Basic level course (meant to give an introduction in a subject);
- Intermediate level course (intended to deepen basic knowledge and skills);
- Advanced level course (intended to further strengthening of expertise);
- Specialized level course (meant to build up knowledge and experience in a special field or discipline).

One can imagine that a first cycle programme is based on a structure which makes use of the notions of basic, intermediate and advanced levels. In a second cycle programme, in particular a two year or 120 ECTS-credit programme, a distinction between the advanced and the specialized level might also prove very useful.

Calculation of credits in terms of workload

The definition of credits

The actual calculation of credits in terms of workload has proven to be a difficult issue. First of all it should be clear what is meant by credits. The following definitions seem to be workable:

Credit is a measure of student workload based on the time necessary to complete a given teaching/learning unit.

In ECTS terms:

60 ECTS credits measures the workload of a typical student during one academic year.

The number of hours of student work (that is, of the typical student) required to achieve a given set of learning outcomes (on a given level) depends on student ability, teaching and learning methods, teaching and learning resources, curriculum design. These can differ between universities in a given country and between countries.

Since credits, whether relative or absolute are, hence, only a measure of workload within a curriculum, credits can only be used as a planning or monitoring tool when the curriculum itself has been defined. In order to create, modify or evaluate a curriculum, general and specific learning outcomes must be agreed upon.

Estimating average workload and performance

It is often argued that the *typical* student does not exist. How to determine the average standard of brightness? There is a consensus though, that it takes time and a certain standard of preparation/background to acquire certain knowledge and skills. Therefore, time employed and personal background are the two elements that can be identified as variables in learning achievement with respect to a particular course or study programme. In this context, pre-requisite knowledge when entering a given recognised qualification is a basic element. Its actual level/amount may measurably influence the workload of the student during the course programme. Teaching staff normally has a rough idea of what it can ask a student to do in a certain amount of time in a certain programme. Furthermore, teaching staff has a clear notion about quality standards. However, it is commonly accepted that if a *typical* student puts in more effort into preparing an examination the grade will probably be somewhat higher. Similarly, if a good student spends the expected amount of time to prepare an examination, he or she will be rewarded with a good grade. If less time is spent, the grade will probably be lower. In other words, there is a relationship between the effort and the results of a student. Accepting the fact that the actual time that any particular student needs to spend in order to achieve the learning outcomes will vary according the capacities of the individual student and be influenced by the degree of prior learning and to the mode of learning, the so-called notional learning time can be defined. The notional learning time is the number of hours which it is expected a student (at a particular level) will need, on average, to achieve the specified learning outcomes at that level.[7]

7. Credit and HE Qualifications. *Credit Guidelines for HE Qualifications in England, Wales and Northern Ireland*, p 4.

Methods of calculating workload

In practice different approaches are used to calculate the student workload. Although there are differences due to the subject, common denominators can be identified also.

In the calculation of workload the following items play a role:

- The total number of contact hours for the course unit (number of hours per week x number of weeks);
- Preparation before and finalising of notes after the attendance of the lecture/seminar;
- The amount of further independent work required to finish the course successfully.

The last item is the most difficult one to calculate and depends largely on the discipline concerned and the complexity of the topic. Independent work can contain the following items:

- The collection and selection of relevant material
- Reading and study of that material
- Preparation of an oral or written examination
- Writing of a paper or dissertation
- Independent work in a lab

It should be obvious that the calculation of workload in terms of credits is not an automatic process. The professor has to decide on the level of complexity of the material to be studied per course unit. It goes without saying that prior experience of the staff plays an essential role. One of the main contributions of the process of credit allocation is that it leads to more reflection on curriculum design and teaching methods on the part of the teaching staff.

In order to check regularly whether students are able to perform their tasks in the prescribed period of time, it has proven to be very useful to utilise questionnaires. In those questionnaires students are asked not only about how they experienced the workload, but also about their motivation and the time reserved for the course.

Length of the academic year in Europe

Results of Tuning surveys

Just as with defining the typical student, it does not seem easy to cope with the variety of the lengths of the actual study period per academic year within Europe. As stated before, the length of the academic year, i.e. the number of working hours of an academic year, is one of the factors in determining how many student working hours one ECTS credit contains. In Europe the length of the academic year at first glance seems to differ from country to country and in some cases within a country from institution to institution. Although time in itself is clearly an insufficient measure, the Tuning Project has done a survey to obtain a better picture of the actual situation. From the acquired information a number of general conclusions can be drawn. The first one is that a distinction has to be made between the actual number of teaching weeks, the number of (independent) study weeks and fieldwork, the preparation time for examinations and the number of examination weeks. The total of these gives the actual length of the teaching period and offers therefore comparable information per discipline, institution and/or country. The second conclusion is that, when programmes are broken down, the differences in length prove to be much smaller than one would expect at first glance.

This last conclusion is in line with the information that has been collected about the *official* length of the academic year of institutions and countries, e.g. the beginning and the end of an academic year. This calculation takes into account vacation periods during which it is normal for students to be expected to continue to work, prepare assessments, projects, dissertations. In the latter case nearly all countries fit in the range of 34 to 40 weeks per year. If it is accepted that a week contains 40 to 42 hours, the actual number of «official hours» in which a student is expected to work during an academic year runs from 1400 to 1680 (1800[8]). Even in the cases of systems where the formal specification of hours is lower, it is evident that, in practice, because of work undertaken in vacation periods, the actual number of hours corresponds with the general norm. The point average seems to lie around 1520 hours per year. Given the fact that an

8. In a number of countries it has been stated in law that an academic year for students has a workload of 1500 to 1800 hours.

academic year contains 60 ECTS credits, one credit represents then approximately 25 to 30 hours of student workload. This range of difference seems to be acceptable. The average point lies around 25 to 26 hours per credit.

Some special cases

If a regular study programme is 34 to 40 weeks, there is limited time left to obtain more ECTS credits than the set standard number of 60 within an academic year. If the assumption is accepted that a normal study programme should contain 36 to 40 working weeks, there remains a maximum of 10-12 weeks in which extra course work can be done. This observation is relevant for second cycle programmes, which are based on a *full calendar year* of study instead of 9 study months. These programmes are on offer for example in the UK and Ireland. If a programme lasts 12 months, which are approximately 46 to 50 weeks, it should have an allocation of 75 ECTS credits. A structure in which an academic year contains more credits than that number is undesirable. If we summarise:

- a normal course programme has an official load of 60 ECTS credits per academic year;
- a second cycle programme or so-called *full calendar year* programme (e.g. a 12 months programme) can have a maximum load of 75 credits (which equals a formal programme of 46 to 50 weeks);
- a second cycle programme or Master programme of 90 ECTS credits is based on a lengths of 14-15 study months (which equals 54 to 60 study weeks).

For all programmes which demand more than 1500/1600 hours (36/40 weeks) per year, to be able to award more than 60 credits, evidence of the workload should be given.

It has also to be recognised that many students study part-time nowadays. If for example, a part-time study programme holds 45 ECTS credits a year, four years of study equals three years of full-time study. Credits give a fair way to organise part-time learning programmes.

Workload, teaching methods and learning outcomes

Workload, teaching methods and learning outcomes are clearly related to each other. However, there are other relevant elements. In achieving the desired learning outcomes a large number of interrelated factors play a role. These are not limited to the number of working hours, workload and brightness of the student. Also methods of teaching and learning have to be taken into account. It might make quite a difference whether teaching is organised in large groups or more individually: in other words, whether the majority of course units a student has to take are lectures or seminars, exercise courses and practical exercises. Furthermore the number of students in a working group might have its effect on the result of teaching, as probably the use of a tutorial system has. Also the kind of assessment will play a role, as will the design and coherence of the curriculum (is it focused on gradual progression in performance or does it make excessive or insufficient demands in some phases?) as well as the quality of the organisation and the availability of advanced teaching aids like computers. Furthermore, national and regional traditions have to be taken into consideration. For example, in some countries most students will live at home and need time to travel, while in others they live on their own and have to look after themselves. In others again they will be housed on campuses. All these factors bear, in some measure, on the results of the teaching/learning experience as measured in time (in terms of credits) and in performance (in terms of level of achievement). In an ideal situation the aims and objectives set will be fully reached in the notional learning time. As said before, notional learning time is not the actual time that any particular learner needs to spend in order to achieve the learning outcomes. The actual time will differ from student to student. In many cases the ideal situation will not exist.

To summarise, we may consider the relevant elements which play a role under the following headings:

- Diversity of traditions
- Curriculum design and context
- Coherence of curriculum
- Teaching and learning methods
- Methods of assessment and performance
- Organisation of teaching
- Ability and diligence of the student
- Financial support by public or private funds

The above mentioned factors make clear that it is not only impossible, but also undesirable, to identify one way of achieving desired learning outcomes. Given the internal and external circumstances and conditions the right balance for every course programme has to be found in terms of the above mentioned factors, of which time is one. This mix will vary from institution to institution and from country to country. Thus it becomes clear that different pathways can lead to comparable learning outcomes. In this way the existing diversity in Europe can be fully maintained.

Study programmes require continuing monitoring, adjustment and evaluation. This guarantees that the required learning outcomes can still be obtained when the circumstances and/or conditions, i.e. one or more of mentioned factors, change. Monitoring, adjusting and evaluating are very important internal processes for which staff and students are responsible equally.

The most important external way to check whether the applied mix is the ideal one is by regular quality assurance and accreditation. We will come back to this issue in a separate paper. What can be said here is that quality evaluation schemes are developed to check whether the actual learning outcomes are of the intended level and whether they are actually met by the content of the programme. At present, these are mainly organised on a national level, but it may be expected that quality assurance and accreditation will be internationalised in the near future.

Conclusion

This paper makes clear that many factors play a role in the teaching and learning process. It also makes clear that credits as such are not a sufficient indication for the (level of) learning achievements. The only reliable way to compare pieces of learning and study programmes offered by (higher) education institutions is to look at learning outcomes/competences. By defining the right learning outcomes, standards can be set with regard to the required level of discipline related theoretical and/or experimental knowledge and content, academic and discipline related skills and general academic or transferable skills. With the exception of the last one these will differ from discipline to discipline. To make programmes more transparent and comparable on a European level, it is necessary to develop learning outcomes/competences for each recognised qualification. These learning outcomes should be identifiable and

assessable in the programme that opts for such a qualification. Learning outcome should not only be defined on the level of formal qualifications such as degrees but also on the level of modules or courses. The inclusion of learning outcomes in the pieces and the total of a curriculum stimulate its consistency. They make explicit what a student should learn. It is obvious that credit accumulation and transfer is facilitated by clear learning outcomes. These will make it possible to indicate with precision the achievements for which credits are and have been awarded.

The definition of learning outcomes/competences is a responsibility of the teaching staff. Only specialists of the same field will be able to formulate useful learning outcomes, although, it is useful to consult other stakeholders in society. The fact that the higher education sector has been internationalised and that institutions and disciplines compete on a global level nowadays, makes it necessary that the more general learning outcomes for each discipline or field are designed on a supranational level. By defining learning outcomes in this way universal standards are developed, which should be the bases for internal, national and international quality assurance and assessment. One of the major tasks of the project *Tuning Educational Structures in Europe* is the development of the required methodology for defining learning outcomes/competences. This methodology should offer the mechanism to cope with recent developments like the internationalisation of labour and education, the interruption of academic studies as an effect of the introduction of a two-cycle system and lifelong learning. In this paper we have tried to clarify the definition of credits to use these effectively in planning courses designed to achieve the agreed learning outcomes/competences.

The objective of the paper has been to show the relationship between educational structures, learning outcomes, workload and the calculation of credits in particular within the context of the Bologna Process. This relationship is very relevant in the world of today where traditional teaching is partly replaced by new types of teaching and learning and where traditional higher education institutions experience more and more competition with comparable institutions and with non-traditional institutions which offer novel, attractive opportunities for learners. It is in the interest of society as a whole that learners find their way in a global educational market-place. Transparency is not only the keyword for that market-place but also for degree programmes. Quality assurance and accreditation is an integrate part of this picture. Competitiveness requires the definition of learning outcomes/competences to be transparent and requires a credit system which allows comparison. In this respect the

ECTS methodology and tools (learning agreement, transcript of records and —in future— level and course descriptors), relevant for both mobile and non-mobile students, are of crucial importance. The same is true for the Diploma Supplement. Employability in both a national and an international setting is critical for today's student. It implies that the student will shop for study programmes that fit best to his or her abilities. Comparison requires not only comparable systems of higher education on a European level but also comparable structures and content of studies. The definition of learning outcomes/competences and the use of ECTS as a transfer and an accumulation system can accommodate these objectives.

Prepared by Robert Wagenaar.

4.2. Student workload, teaching methods and learning outcomes: The Tuning approach

The need

While many countries in Europe are preparing the implementation of a two cycle system in accordance with the Bologna process, it becomes increasingly clear that there is a need to provide some simple reference points with regard to student workload. The issue of workload is related to the introduction of the ECTS credit system, both as a transfer and an accumulation system. ECTS is one of the tools for promoting comparability and compatibility in European Higher Education. The need for having clear agreed reference points also arises from the demand for transparency and fairness to students[9].

ECTS principles

The European Credit Transfer and Accumulation System, abbreviated as ECTS, is a student-centred system based on the student workload required to achieve the objectives of a programme, objectives specified in terms of the learning outcomes and competences to be required. ECTS is based on a number of principles[10]:

- 60 credits measure the workload of a full-time student during one academic year. The student workload of a full-time study programme in Europe amounts in most cases to around 1500-1800 hours per year and in those cases one credit stands for around 25 to 30 working hours.[11]

9. The term student is used in this paper for any type of learner.

10. A detailed description of the ECTS features can be found in the ECTS Users' Guide, which is available on the Europa Internet server of the European Commission: http://europa.eu.int/comm/education/programmes/socrates/ects/index_en.html .

11. In second cycle full time programmes of studies we can distinguish two types: normal course programme which have an official load of 60 credits and so-called *intensive programmes* of a full calendar year (e.g. 12 months programmes, in stead of a 9 to 10 months programmes) can have a maximum load of 75 credits (which equals 46 to 50 weeks).

• Credits in ECTS can only be obtained after successful completion of the work required and appropriate assessment of the learning outcomes achieved. Learning outcomes are sets of competences, expressing what the student will know, understand or be able to do after completion of a process of learning, long or short.

• Student workload in ECTS consists of the time required to complete all planned learning activities such as attending lectures, seminars, independent and private study, placements, preparation of projects, examinations, and so forth.

• Credits are allocated to all educational components of a study programme (such as modules, courses, placements, dissertation work, etc.) and reflect the quantity of work each component requires to achieve its specific objectives or learning outcomes in relation to the total quantity of work necessary to complete a full year of study successfully.

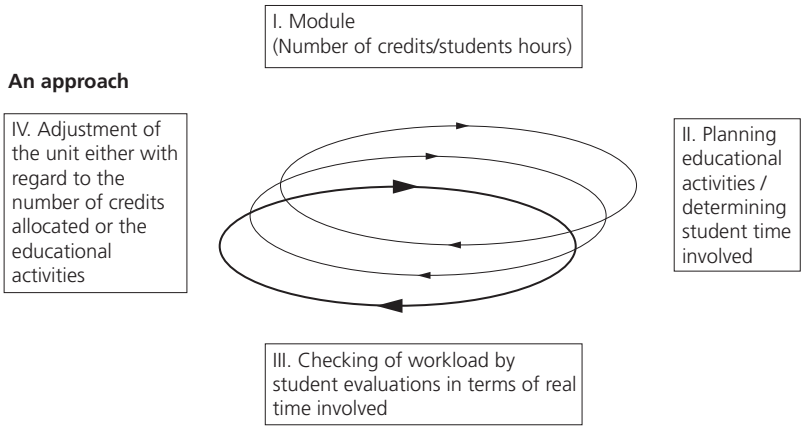
The project *Tuning Educational Structures in Europe,* which focuses on learning outcomes and general academic (generic) competences and subject related competences, has shown us that approaches to teaching, learning and assessment have an impact on the workload required to achieve the desired learning outcomes and, consequently, on credit allocation. Workload, teaching methods and learning outcomes are clearly related to each other. However, there are other relevant elements. In achieving the desired learning outcomes a large number of interrelated factors play a role. The diversity of traditions has to be taken into account, as well as curriculum design and context,, coherence of the curriculum, teaching organisation, ability and diligence of the student. In other words, the time required to achieve the same learning outcomes may vary according to the context.

An approach for determining student workload in higher education programmes

When deciding on the student workload the following elements are of relevance:

- The student has a fixed amount of time depending on the programme he/she is taking.
- The overall responsibility for the design of a programme of studies and the number of credits allocated to courses lies with the responsible legal body, e.g. faculty executive board, etc.

- The final responsibility for deciding on the teaching, learning and assessment activities for a particular amount of student time is delegated by faculty and university authorities to the teacher or the responsible team of staff.
- It is crucial that the teacher be aware of the specific learning outcomes to be achieved and the competences to be obtained.
- The teacher should reflect on which educational activities are more relevant to reach the learning outcomes of the module/course unit.
- The teacher should have a notion of the average student work time required for each of the activities selected for the module/course unit.
- The student has a crucial role in the monitoring process to determine whether the estimated student workload is realistic, although monitoring is also a responsibility of the teaching staff.



Four steps

To realize the overall objective, namely the development of an approach which leads to a truly valid consideration of a student's workload, implementation of the following four steps is recommended.

I. Introducing modules/course units

A choice must be made between the use of a modularized or a non-modularized system. In a non-modularized system each course unit can have a dif-

ferent number of credits although the total credits for each academic year will still be 60. In a modularized system the course units/modules have a fixed number of credits, 5 credits for example, or a multiple of this number. The use of a modularized system in an institution facilitates the use of the same modules by students enrolled in different programmes.

II. Estimating student workload

The workload of a module/course unit is based on the total amount of learning activities a student is expected to complete in order to achieve the foreseen learning outcomes. It is measured in time (in work hours); for example, a module of 5 credits allows for around 125-150 hours of work of a typical student.

Educational activities can be defined by considering the following aspects:

- *Modes of instruction (types of teaching and learning activities):* lecture, seminar, research seminar, exercise course, practical, laboratory work, guided personal study, tutorial, independent studies, internship, placement or «stage», fieldwork, project work, etc.
- *types of learning activities:* attending lectures, performing specific assignments, practising technical or laboratory skills, writing papers, independent and private study, reading books and papers, learning how to give constructive criticism of the work of others, chairing meetings, etc.
- *types of assessment:* oral examination, written examination, oral presentation, test, paper/essay, portfolio, report about an internship, report on fieldwork, continuous assessment, (final) thesis/dissertation, etc.

Teachers estimate the time required to complete the activities foreseen for each course unit/module. The workload expressed in time should match the number of credits available for the course unit. Teachers must develop suitable strategies to use the time available to best advantage.

III. Checking the estimated workload through student evaluations

There are different methods to check whether the estimated student workload is correct. The most common method is the use of questionnaires to be completed by students, either during the learning process or after the completion of the course.

IV. Adjustment of workload and/or educational activities

The outcome of the monitoring process or an updating of the course content might lead to an adjustment of the workload and/or the type of educational activities of the course unit/module. In a modularized model it will be necessary to adjust the amount of learning material and/or the types of teaching, learning and assessment activities, because the number of credits (e.g., in our example, 5 or a multiple of 5) is fixed. In a non-modular model also the number of credits can be changed, but this will, of course, have an effect on other units, because the total number of credits of the programme of study is fixed (e.g. 30 per semester, 60 per year etc.). An adjustment of workload and/or activities is required anyway when the monitoring process reveals that the estimated student workload does not correspond to the actual workload.

Explanatory note regarding the use of the tuning model in practice

The Tuning approach is based on the correlation of a number of decisive elements:

- the degree profile which indicates the place of the module in the overall programme of studies, as well as the competences to be developed in the module.
- the target group, the level of the module and any existing entrance requirements
- the learning outcomes formulated for the module
- the educational activities which best suit the learning outcomes to be achieved
- the types of assessment that are considered most appropriate to the learning outcomes
- the average work time (in hours), based on student workload, required to perform the educational activities which are necessary to achieve the learning outcomes.

Tuning offers two forms that can be helpful in making decisions on and adjustment of the student workload. The first form is for the teacher to plan the educational module and estimate the student working hours involved. The second is for the student to indicate the actual amount

of time spent on the module, thus providing an opportunity to check whether the estimated workload corresponds to reality. Students are given the form completed by the teacher where only the estimated workload is not shown. By using these forms both teacher and students become aware of the learning outcomes, their relationship to the competences being developed and the average student time involved for each of the tasks.

Prepared by Julia González and Robert Wagenaar

Tuning
Educational Structures
in Europe

PLANNING FORM FOR AN EDUCATIONAL

MODULE

(to be completed by the teacher)

Programme of Studies: ……
Name of the module / course unit: ……
Type of course (e.g. major, minor, elective): ……
Level of the module / course unit (e.g. BA, MA, PhD): ……
Prerequisites: ……
Number of ECTS credits: ……
Competences to be developed:

1. ……
2. ……
3. ……
4. ……
5. ……
6. ……

Learning outcomes	Educational activities	Estimated student work time in hours	Assessment

Tuning
Educational Structures
in Europe

FORM FOR CHECKING WORKLOAD OD AN EDUCATIONAL MODULE

(to be completed by the student)

Programme of Studies: ……
Name of the module / course unit: ……
Type of course (e.g. major, minor, elective): ……
Level of the module / course unit (e.g. BA, MA, PhD): ……
Prerequisites: ……
Number of ECTS credits: ……
Competences to be developed:

1. ……
2. ……
3. ……
4. ……
5. ……
6. ……

Learning outcomes	Educational activities	Estimated student work time in hours	Assessment

5. Approaches to teaching, learning and assessment in competence based degree programmes

Background

As part of the second phase of the Tuning Project, the subject groups reflected on good practices in teaching, learning and assessment, in particular how teaching, learning activities and assessment can be best organised in order to allow students to reach the intended learning outcomes of a course of study. Biggs (2002) describes this as the «alignment» of teaching, learning activities, and assessment with the intended learning outcomes of a course of study. The subject groups discussed the various approaches which are used or could be used in different subject areas, and provided a structured pan-European disciplinary-based context where an exchange of knowledge about approaches currently used or potential, could take place and where new understanding could be achieved.

Introduction

One of the key issues in higher education towards the end of the 20th century was the debate about the respective virtues and requirements of traditional academic education and vocational education. Much of the debate took place within universities, particularly in the new context of the knowledge society. Many professions once wholly practiced by persons not holding a university degree saw increased demands for university training. One consequence was the introduction of more professional courses into the university system in some countries, and a greater emphasis on the utility value of university courses in those countries with a binary system. In many EU countries university academics have had to reconcile educational dimensions and professional requirements and manage the tensions that have emerged in trying to achieve this.

A second issue arose from new attitudes to personal rights partly resulting from EU legislation around human rights, freedom of information, data protection and so on. In the new spirit of openness students be-

came much more conscious of what was offered, what was excluded, and what their rights were. This student awareness also brought the awareness that the possession of a university degree does not automatically confer employment —certainly not for life— in a rapidly changing Europe. In some countries employers, too, began to make greater demands on universities to describe better what students can actually do on graduation, not just what they know.

One response to these changes was to try and make transparent the relationship between university education and core or transferable skills. The most explicit response was the development of an «outcomes» approach or a competence based model for curriculum development in universities. Two major schools of thought have emerged which can be broadly divided into those approaches which emphasise higher education as a public good, versus those which also lay emphasis on the vocational utility of higher education. Tensions between vocational and public good approaches are to be found not only in Europe, but in the United States. One of the foremost educators in the United States argues that «constructions of outcomes that are embedded within market approaches to education reform legitimize the dominance of "private goods" and undermine the view that public education is an enterprise for the public good in a democratic society» (Cochran-Smith, 2001, p. 50). The Tuning Project does not seek to resolve this debate but, nevertheless, wishes to indicate its awareness of it.

A description of the long and complex development of changes in university education across Europe, particularly on the issues that have influenced curricular change, is beyond the scope of this chapter.

Europe requires its people to be culturally and intellectually equipped in ways appropriate both for their present and for their future. Only thus will they be able to lead meaningful and satisfying lives, personally and collectively. Institutions of higher education have a key role in developing appropriate strategies. It is the responsibility of higher education institutions to prepare their students, in a life long learning perspective, for a productive career and for citizenship. Universities and other higher education institutions increasingly have come to realise that theirs is a moving target, and that their leadership in the field of the elaboration and transmission of knowledge and understanding implies a new sensitivity towards developments in society. They increasingly look to consultation with their stakeholders on a regular basis. Education inspires progress in society, but at the same time it

must respond, with foresight, to society, preparing adequate strategies for future programmes of studies.

The Tuning Project's approach to setting up degree programmes and ensuring quality in their design and implementation combines both aspects. In phase I of the Tuning Project the emphasis was on the process of consultation with «actors» or «stakeholders», the definition of academic and professional profiles and the translation of these into desired learning outcomes. Tuning identified indicative generic competences or transferable skills and described the then commonly used subject-specific competences in terms of knowledge, skills and understanding for nine subject areas. Tuning II has turned to the next step looking at how to implement competences, defined on the bases of identified requirements of society and foreseen social developments besides scientific developments in the subject area concerned, in terms of approaches to teaching, learning, and assessment.

The Tuning approach

In the Tuning Project the decision was taken to make a distinction between generic competences (transferable skills) and subject-related ones, although it is accepted that key outcomes of university programmes will be subject related competences. Tuning I showed that an indicative sample of employers, graduates and academic staff were in broad agreement about which generic competences, from a range offered in a questionnaire survey, are the more relevant ones, although they differed slightly with respect to the order of importance of some of them.

The importance of these generic competences is now widely understood, but understanding of the concept alone is insufficient. The true importance lies in the implications a competence-based approach has for teaching and learning. In other words, which appropriate modes of teaching, which learning activities might best foster competences in terms of knowledge, understanding and skills; and how do we assess these competences.

Definitions

One of the problems the Tuning members encountered in discussing approaches to teaching, learning and assessment on a European-wide

scale was that every country, and even institution, has its own peculiarities and features deeply grounded in its national and regional culture. Each has its own written and unwritten rules about how to prepare students best for society. On commencement of a mapping exercise on the approaches currently in use or planned in different national systems or individual universities, it became clear that each has developed its own mix of techniques and kinds of learning environments, all of which are well founded, but which need to be mutually understood. It may be the case that the same name is given to different methods (e.g. «seminar», «lecture», «tutorial») or, conversely, different names correspond to similar activities. Tuning has seen it as one of its tasks to create more clarity with regard to the issue of definitions and their understanding in practice. A comprehensive list of terms and their translations into to all European languages is being developed and this glossary will be published on the Tuning website at the end of 2005.

A wide range of teaching techniques is used in universities. The set of teaching techniques strongly depends on the instructional form of education (face to face education, education by correspondence or distance education). Apart from the ubiquitous lecture, the consultation revealed the following list (which is far from exhaustive)

- Seminar (small group teaching)
- Tutorials
- Research seminar
- Exercise classes or courses
- Workshops (classroom based practical classes)
- Problem-solving sessions
- Laboratory teaching
- Demonstration classes
- Placement (internship/traineeship)
- Work based practice
- Fieldwork
- Online/Distance or e-learning: which may be paper based or ICT based

Such lists are indicative only, and are really a list of categories of teaching activity, since how each is undertaken may vary widely not only between academics but within the everyday practice of any one academic, depending on the focus of the teaching and the intended learning outcomes for the students. The lecture itself can vary immensely in format and function. At one extreme it can be a turgid reading aloud of the lecturer's notes with students frantically trying to replicate these in their notebooks (the «tops of your heads» approach to lecturing, since all that can be seen are the tops of the heads of lecturer and students). At another extreme, the students will have read the notes before the lecture on the intranet, and will participate in a presentation that fleshes out the notes supplemented by interesting examples provided by both lecturer and possibly also by students from their reading. The scope or function can also be quite different. A lecture introducing a new topic may provide an overview so that students can quickly become aware of who are the key players in this aspect of a field, how it has developed, and where current concerns are focussed. But not all lectures deal with broad scopes: one might, for example, use a lecture to fully explicate some key but complex concept, engaging students in some small group or individual problems at different points. Thus it is with all of the teaching techniques. The mere label is handy, but it does not tell exactly what the lecturer does.

One way of gaining some insights into the teaching techniques used is to look at what learning activities students are also required to do in a programme or part of a programme of study. As with teaching, learning activities called by the same name can differ quite widely. Apart from attending lectures (participating in lectures) or reading books and journals, the following (inevitably partial) list of commonly used learning activities gives some idea of the richness that is possible in aligned teaching and learning.

- Conduct searches for relevant materials in libraries and on-line
- Survey literature
- Summarize those readings which seem to be most relevant to their current needs.
- Learn to pose problems as well as solve those set by the lecturer
- Conduct increasingly complex even if small scale, research
- Practise technical or laboratory skills

- Practice professional skills (e.g. in Nursing, Medicine, Teaching)
- Research and write papers, reports, dissertations of increasing difficulty (in terms of size and complexity of the material)
- Work with other students to co-produce a report/design/answer to a problem
- Prepare and make oral presentations, either in groups or individually
- Make constructive criticism of the work and others, and use the criticism of others productively
- Chair and participate usefully in meetings (of seminar groups, for example)
- Lead or be useful members of teams
- Work under time constraint to meet deadlines
- Communicate questions and findings with others using a variety of media
- Learn to criticize their own work

To complete the cycle of learning one must also look at how students' achievement of learning outcomes is assessed. Assessment is not just the rounding off of the teaching and learning period but to a large extent a central steering element in those processes, and directly linked to learning outcomes. At one time, in some countries the oral examination was the most used method of assessment, while in others it was the essay. In a number of countries even today the essay remains a commonly used mode(s) of assessment. There is nothing wrong with essays as such, as long as the task set is appropriate to the unit of study and to its intended learning outcomes, and the lecturer has the time to mark them promptly and provide written feedback which is constructive and focussed. Nevertheless, the long written paper is only one of the options that the busy lecturer has at his or her disposal, and the main competence assessed is the ability to research and write such papers in the appropriate genre: useful academic skills, but not the only ones students need to develop and demonstrate the ability to perform.

Most programmes described in Tuning use a range of modes of assessment at different points in the programme. Coursework assignments, which may be formally assessed and graded —or not— assess student

performance as the programme or part of it progresses. These may include the following, but again this is not an exhaustive list, merely that which arose from the Tuning work.

- Tests of knowledge or skill
- Oral presentations
- Laboratory reports
- Analyses, e.g. of texts, data
- Performance of skills while being observed e.g. in work placements, laboratories
- Work placement reports or diaries
- Professional portfolios
- Fieldwork reports
- Written essays or reports or parts of these, e.g. a written review of relevant literature; a critique of contrasting research papers

Central to all of these ways of assessing student work *during* a programme is feedback. The assessment is said to be *formative*, because the students learn by doing the work and then having the lecturer comment on how well they have achieved it, where they have done less well, how to improve, and what steps might be taken to do this. To further enable students to achieve the task successfully it is increasingly the case that students are given the criteria for success at the outset: a specification of what they have to do in order to complete the task satisfactorily.

Of course, in any programme of study, or parts of it, there is a need for *summative* assessment. Sometimes the coursework discussed above performs both a formative and a summative function. The grade given is the summation of the student's achievement in that element, and the feedback from lecturer —and sometimes peers as well— is the formative part.

Traditionally, however, and still commonly used for a variety of reasons, there are some forms of assessment which are usually only summative: they assess achievement at the end of a programme or part of it, and students may receive only their mark or grade (which does have its formative aspect!) rather than feedback from the lecturer. If the examination

has a follow-up seminar or tutorial to discuss the results it then contains a greater amount of the formative function.

Some form of invigilated examination is the usual format for summative assessment; this may be written or oral. Written examinations have the virtue of cheapness and security: a large cohort can be examined at the same time, while oral examinations can probe a student's learning in ways that a written format normally does not allow.

Written examinations can take a wide range of formats, including the following short list of common ones

- Essays
- Multiple choice questions
- Problems to solve (e.g. in mathematics, physics, linguistics among others)
- Analyses of cases/data/texts
- Literature reviews e.g. based on memory, or open book or takeaway procedure

Oral examinations can also have a wide range of formats, within the following two categories

- Oral questioning by (usually) more than one lecturer
- Demonstration of a practical skill/ set of skills

It goes without saying that almost any form of assessment can have a diagnostic function for both student and lecturer. By seeing what has *not* been achieved, what has been achieved with little effort, what is excellent, and so on, both the teacher and the learner know where more work is needed or where effort can be diverted.

So far, the project based dissertation or thesis has not been mentioned. This is an example of a complex mode of assessment, widely used across Europe in every subject area, and in all degree cycles in varying levels of complexity, and with different purposes at each level. The thesis is a summative assessment of a programme or substantial part of a programme, demanding the demonstration of a range of competences and understanding. It is also strongly formative in that it is normally prepared under the supervision of a lecturer, who advises the student on the work, and

certainly provides feedback at different stages of its development. The summative examination may be oral or written i.e. based on the text. At doctoral level the final examination of the thesis is always by an oral examination (the defence of the thesis), although the format of this may vary quite widely from country to country, but in the lower two cycles assessment of projects and dissertations may be based on the student's written document alone.

In many institutions guidelines and requirements have been developed for the assessment of learning at different programme levels, as well as for preparing final theses. In particular, it is becoming the norm to publish the criteria for success in assignments, something which should be universal. Many Tuning members reported that their departments were instituting procedures for fair assessment. European wide guidelines[12] are now emerging, which say, for example,

Student assessment procedures are expected to:

- Be designed to measure the achievement of the intended learning outcomes and other programme objectives;
- Be appropriate for their purpose, whether diagnostic, formative of summative;
- Have clear and published criteria for marking;
- Be undertaken by people who understand the role of assessment in the progression of students towards the achievement of the knowledge and skills associated with their intended qualification;
- Where possible, not rely on the judgements of single examiners;'

Finally, when discussing assessment issues across different cultures, it is important to probe the different ideas about what should be taken into account in assessment vary. For example some systems prize hard work, others high achievement, others high potential. This underlying value system is easily forgotten in a straightforward description of what modes of assessment are used, but in a «mobile Europe» is one which should be better understood.

12. Standards and Guidelines for Quality Assurance in the European Higher Education Area §1.3.
http://www.bologna-bergen2005.no/Docs/00-Main_doc/050221_ENQA_report.pdf

The Tuning II consultation

To obtain a better overview of possible learning, teaching and assessment strategies based on a learning outcomes/competence approach, Tuning II organized an extended consultation among its members. Each academic involved in the project was asked to reflect on a given number of subject-specific and generic competences and to identify ideas and best practices to develop these competences in a degree programme in terms of learning activities, teaching, and assessment. They were asked to find answers to the following five questions:

1. What does this competence mean for your students?
2. How do you help students to achieve this competence in your teaching methods?
3. What learning activities do your students engage with in order to develop this competence?
4. How do you assess whether, or to what degree, they have achieved this competence?
5. How do your students know whether or to what degree they have achieved this competence, and if not, why they have not achieved it?

Tuning members followed different strategies to find reliable answers, including consultation with colleagues in their home institutions. Most subject groups identified possible strategies either based on ideas or real experience. While some reported actual practices, others described how current good practices could be linked to new concepts of competences, and so reported on future possibilities rather than on present practice.

Across Europe, it is clear that there are two main ways of teaching or enhancing generic competences. The first is the provision, as part of a degree programme, of separate course units/modules to enable students to master at least part of the generic competences. In this respect one could think of, for example, academic writing and oral skills and ICT-competences. The second way is for generic competences to be developed as part of or integrated into subject programmes and modules. Through the consultation process it became clear that it is possible to foster generic competences while teaching normal subject area material if there is awareness of the need to do so and if teaching strategies are designed taking generic competences into account. In general, since

different approaches to learning, teaching and assessment tend to form or enhance different generic competences, Tuning members underlined the requirement that each student experience a variety of methods.

The consultation process on generic competences

On the basis of the materials prepared and presented by the different subject area groups in Tuning, an overview is offered of how certain specified generic competences are perceived, what teaching/learning methods are or could be used to encourage their development, and how they are assessed. Further aims are to see how they are perceived by (or, possibly, what their importance is for) students and to investigate whether there are teaching learning methods used in some disciplinary areas, or in some countries or in some institutions which can usefully be proposed as models of good practice or which can be of interest more generally in developing new insights into competence-based curriculum design and delivery.

It is striking to see how differently some generic competences have been understood in the context of the various subject area groups. Sometimes strong differences can be noted between different national traditions within a single subject area; however it is more common to observe strong differences in perception and methods between different subject areas.

It seems clear from an examination of the answers gathered that generic competences are always interpreted in the light of the disciplinary area. Even in cases in which the graduates or a relevant number of them will almost certainly be expected to work in areas not directly related to the subject in which they will receive a degree, the academics' perception of the generic competences remains quite tightly tied to the subject area disciplines themselves.

The first consequence of this observation is that in practice the generic competences do not appear to be rigidly separate from the subject specific competences. Rather they appear as further variations to be considered within the range of the subject specific competences. An additional consequence is that for each generic competence a distinction must be made between disciplinary areas in which the competence is considered important or even fundamental, a priority for the discipline, and those in which its connection with the subject area is less clear.

The consultation focussed on a selection of the thirty generic competences identified by the Tuning Project. From these eight were selected for discussion in this paper:

1. Capacity for analyses and synthesis
2. Capacity for applying knowledge in practice
3. Basic general knowledge in the field of study
4. Information management skills
5. Interpersonal skills
6. Ability to work autonomously
7. Elementary computer skills
8. Research skills

Capacity for analysis and synthesis

No clear-cut definition of the capacity emerged from the consultation but it was evident that the Subject Area Groups (SAGs) defined analysis and synthesis in a very wide sense. The Business Studies SAG listed among others the elements of identifying the right research question or problem, the ability to describe as well as to conclude and formulate recommendations as indicators. The Education SAG also took into account the reflective ability of a student and the ways in which this demonstrates the capacity for description, analysis and synthesis. The Mathematics group highlighted that a student should use her/his analytical competences when confronted with a problem, and think whether they could relate this to one they have faced before. If this is the case they should 'find out whether the same hypotheses holds water' so that previously achieved results can directly be applied. If not, students should find out what they could use from past experience and start there to develop new approaches to solving the problem. In this context a student would enrich her/his synthesis competence by extracting the key points from their solution, so that they can be presented in a clear, concise and nevertheless complete form.

Other SAGs defined analysis in a way which seems to comprise all these indicators as activities, i.e. this generic competence enables the student to understand, evaluate und assess information which has to be collected, interpreted and the main issues identified. It demands logical

thinking, using the key assumptions of the relevant subject area and even the development of this area further by research. In no SAG was the acquisition of this skill taught in a separate element or module, i.e. this generic competence is embedded in any subject, in any module of teaching and learning.

This view was also supported by the perceptions of students. Data collected from students showed that they attached great importance to this competence as it enabled them to relate theory and practice, evaluate findings logically and use instruments to find out alternative ways; they perceived it as being highly pertinent to their future professional career.

For the description of the competence a large number of expressions were used: to interpret, to find the main points, to understand, to evaluate, to deal with information, to evaluate critically, to marry theory and practice, to organise information, to understand, to place in context, to develop objectivity, to combine, to research, to formulate, not just reproduce, to apply, to describe, to conclude, to think, to compare, to select, to differentiate, to contrast, to break down, to summarise, to argue, to relate, to generalise, to think logically, to think rationally, to appreciate, to consider, to predict, to provide, to solve. This wide definition is essential as it relates directly to the teaching and learning activities which enable students to achieve this competence. It is highlighted that the competence is directly related to the ability to solve problems, another highly ranked generic competence.

It was reported that students develop the capacity for analysis and synthesis through

- formulating ideas of a concept as a result of the reading, researching, discussing and brainstorming in highly specific, subject-focused work, either academically and professionally oriented
- learning to describe objectively, categorize, relate categories
- making independent autonomous interpretations, evaluations, distinctions and differentiation and sharing insights from learning through debates, theses
- becoming aware of their own, and challenging others', taken-for-granted assumptions
- revealing links between contemporary concepts

- quantifying information
- applying relevant theory to source material
- incorporating new conclusions into existing knowledge
- placing specific events and/or problems into wider contexts
- giving proof and/or counterexamples

Assessment of the extent to which this competence has been achieved varies according to the way in which it has been developed. In some SAGs this was done partly through group meetings and discussion sessions. The assessment can also be based on how students analysed material or information. In the Education SAG a variety of modes of assessment were identified: discussion, questioning, observation, evidence of personal and professional engagement, supervision of reports, active participation in placements, essays, assignments, projects, examinations, theses.

Students may also contribute to their assessment by submitting or presenting a «self-evaluation» at the end of the semester. Feedback is organised through group discussions or individually, whether in writing or face-to-face.

SAGs also highlight that *students* identified a number of ways by which they would know if they had achieved this competence, such as

- feeling more competent and confident to put forward an opinion
- being able to relate research findings to theory and/or their own circumstances
- having no problems in writing essays and reports on findings from reading and research
- feeling free and able to criticise or critically evaluate presentations, reports etc. of others
- feeling more comfortable in receiving criticism themselves

Capacity for applying knowledge in practice

In some cases this competence is described in more general terms, such as «facing concrete problems by using basic concepts». In most cases,

however, it is described as the ability to perform specific academic tasks, which may vary according to the discipline. In initial teacher education there is a clear projection into the future teaching profession. In the second cycle this competence is often described in more professional terms, and may be more closely associated with activities to be performed in the workplace such as collecting information from diverse sources and writing a report on a complex issue.

The different teaching methods used to help the students achieve this competence reflect different approaches to practice. Accordingly, the opportunities for practice provided inside and outside the institution are described differently in the various disciplines, as exercises of various types, practical classes, lecture sessions, seminars, field classes, laboratory sessions, industrial projects, industrial placements, study visits, field excursions, student teaching practice. Some disciplines suggest that this competence can be best developed by doing a project or writing a thesis. Others, like Business Studies, Chemistry, Mathematics and Education emphasise the need to provide appropriate tools and methods as well as opportunities for problem solving. The Education group emphasises the importance of reflection on work done. Earth Science (Geology) reported the centrality of this competence to the development of subject knowledge.

Sometimes the learning activities intended to develop this competence are carried out in connection with the world of work. In Business Studies, reference is made to course related tasks/reports carried out with mentor/sponsor companies, to theses based on actual problems from companies or organisations and to guest lecturers. In Physics, Chemistry, Business Studies (among other subjects) final year projects can be carried out (partially or totally) in an industrial environment, and in Nursing and Education there is a substantial practical component. Learning activities for this competence may also be carried out within the academic learning environment, performed by whole classes, small groups and individual students.

It is traditional in Earth Science to have students undertake a mapping thesis involving some six weeks applying their knowledge in the field working either autonomously or in a small group, usually with limited supervision. The resultant report on this independent work can comprise a significant component of the final exam and is considered extremely important by employers.

Continuous assessment of progress is based on seminars, exercises of increasing complexity, laboratory work, short oral presentations, teaching practice, assignments, regular meetings with the teacher for evaluation and feedback on the project. For some courses, only a part of the marks are given for coursework, in other cases coursework completely replaces the traditional examination. This may be particularly true in the second cycle. Final exams can be written and oral tests including practical problems/questions, or proficiency tests in class or laboratories regarding practical problems. This competence *can* be assessed through the essay format provided that the task set is clear and well constructed. A three part model for a task might include a requirement to outline the theoretical bases of the issue; a requirement to outline relevant issues to do with implementation in practice; and illustrations of how this is done, or would be done, in the working context of the candidate. A simple statement of the topic, with the laconic instruction «Discuss» would not probe how far this competence had been developed. It would not examine content knowledge very efficiently, since the topic would be too large to deal with, and there might even be a danger of plagiarism, or at least over reliance on the source materials).

Generally students understand whether or to what degree they have achieved this competence from the feedback they get from the teachers, either on progress made during the course or on their final products and exams.

Basic general knowledge in the field of study

This general competence is the one most obviously linked to the single subject areas. In fact, since it has been designated clearly as basic general knowledge «in the field of study», it seems clear that this was not intended really as a generic competence at all, but rather as a basic level of subject specific knowledge. Hence in the abstract one might expect that the ways of forming this competence would be different for each area, tightly linked to the specificities of the subject. In practice this is not entirely the case. Basic general knowledge is perceived as having three aspects: the first, the basic *facts*; and second the basic *attitude* considered specific to the subject area. The third aspect is constituted by *related* or necessary *general knowledge* which is not strictly subject specific: e.g. knowledge of maths or a foreign language for physicists and of history and politics for education students. Little space is given in the reports to considering whether the basic general knowledge of the subject at first cycle level might in some cases and to some degree

be acquired in school or previous to the higher education experience, and hence be assessed at entry and integrated or completed during the higher education experience in a selective way. Normally for first cycle study universities are very familiar with the school curriculum and have a good idea of what is covered, particularly in the pre-university period. However, in Physics, the subject area group states that the maths knowledge and capabilities obtained in upper school are evaluated at entry in higher education. Another exception is Education, where mature students wishing to enter a teacher education programme may present a portfolio of evidence to show that their qualifications both formal and non-formal are appropriate for entry. This approach, known as Accredited Prior Experiential Learning, is used across Europe.

Basic general knowledge for most subject areas is learned through lectures, reading, discussions, library and Internet searches and assessment through written or oral examination. Discussion of papers, exam results or discussion during the oral examination is thought to make students aware of whether their basic general subject knowledge is adequate. Great effort does not seem to be put into thought and reflection about this aspect of learning; it is accepted by all concerned as necessary, largely a matter of factual and conceptual knowledge. Naturally the pan-European context of Tuning shows that in some subject areas the content of this basic general subject knowledge varies quite radically from country to country, although in others there seems to be relatively little difference. However, in most subject areas there is general agreement about the *core* subject knowledge of first cycle degrees.

It is more complicated to develop or foster the other component of basic general knowledge, the mindset of the discipline, its values, and its methodological or even ethical base. However here a number of strategies were mentioned by the SAGs. Some aspects (rigour of analysis, ethical values and intellectual standards) are discussed in lecture courses, and presumably are criteria for success in assignments. The objective in this case is to tell students what the standards and the values of the subject area are. Students also acquire the mindset of the subject area through their reading, where they constantly see models of how their subject community thinks; they will also gradually see how the different schools within the subject community think and what their attitudes are. In the subject areas that have discussed this general competence, we find that the mindset or attitude, intellectual and ethical values considered fundamental to the subject are also thought to be encouraged by hands-on learning experiences, such as laboratory work in physics or

experience in analysis of historical documents in history, preparation of oral presentations, reports and posters in education.

Information management skills (ability to retrieve and analyse information from different sources

This competence is fairly uniformly understood to mean knowing how to find information in the literature, how to distinguish between primary and secondary sources or literature, how to use the library —in a traditional way or electronically— how to find information on the Internet. One subject area, history, devotes much specific attention to the various kinds of sources of information and techniques for accessing them and interpreting them (indicating archival documents, papyrus, archaeological materials, secondary sources, oral history and so forth) as well as to the more usual kinds of information listed by the other subject areas. In this particular subject area a variety of activities, lectures, workshops, site visits, group and individual work including final research dissertations are seen as connected to this general competence.

In all subject areas there are specific teaching-learning activities devoted to learning library skills. Some of these activities may organised in conjunction with the library staff and have the form of visits to the library or library workshops. Retrieval of information from the Internet and its critical evaluation may be demonstrated in a lecture context with multi-medial support, followed by assignments of student tasks and evaluation of the results. Information retrieval skills are seen as progressive: in one report it is mentioned that in the beginning of the higher education experience students are encouraged to use reference books to supplement the information they receive from lectures, whereas by the time students complete their studies, they should have brought their library and other information retrieval skills up to research level.

In all subject areas, the central activities seen as conducive to this competence are those in which the experimental or research component of the subject is being developed, in order to see whether the student is able effectively to use the library or whatever other appropriate sources of information to supplement his/her individual work. For example, in chemistry, as the student works in the laboratory, he/she may have to have recourse to the literature (on different levels according to the level of study) in order to interpret the laboratory results or to guide in the design of laboratory analyses. In history, the student is required to read and

analyse documents of various kinds and to contextualise them using the bibliography and published sources. Such exercises will be more or less elaborate and more or less original according to level of study. In earth science students are asked to organise presentations, written or oral, of the material collected and to show that they have interpreted it properly using the relevant literature.

Feedback on students' efforts is perceived as particularly important for this competence, and is in the form of written or oral comments on student work. On the basis of the reports it seems that the subject areas have a clear perception of the importance of this competence and that it is developed and assessed —to varying degrees of complexity and characteristics that are determined by the subject area— in all disciplinary studies.

Interpersonal skills

This competence is seen as central to three subject areas, Education, Nursing and Business Studies, all of which in one way or another provide specific activities to develop what is perceived as an important competence for the subject area as well as an important general competence. For the other subject areas, this competence is perceived as useful or necessary for survival, citizenship and employment, but not subject related —and according to some reports not even very important.

In Business Studies the means mentioned for developing these skills are group work, presentations, specific lectures, training-coaching course. A specific kind of activity is a computer-based Business Studies game in which groups of students must act out realistic business scenarios, working in groups and dealing with issues of group dynamics, time management, decision making and so forth. Nonetheless, it is stated that except for the actual performance in such activities, there is little knowledge of how to evaluate and assess interpersonal skills and that this competence needs further work.

In Education and Nursing, the interpersonal skills cluster of competences is at the centre of reflection. In fact, in a very meaningful sense, for many graduates of Education and Nursing their work is an entirely interpersonal activity. In Nursing particular communication aspects are key skills, such as presencing, observation, listening, asking questions, non-verbal communication, ability to have conversations with different groups of interlocutors, leading and participating in meetings. These skills are of-

ten contextualized in written practices, including, for example, preparing written health promotion materials for different audiences.

In Education, there also is a great awareness of the different aspects that this competence has. Interpersonal skills are defined as including not only the ability to work in a group, to present one's projects effectively and possibly to develop leadership skills —here emphasis is placed on the dialogic nature of interpersonal skills and of the teaching-learning process. Aspects considered are, very significantly, «listening» (not mentioned by any other group except Nursing), verbal and non-verbal communication, ability to guide discussion groups or to work in them; to deal in a civilised way with people from a wide variety of backgrounds; to conduct interviews; to create interactive teaching and learning environments. SAGs noted that students should be and will inevitably be in possession of many interpersonal skills when they start higher education; however the considerations of the Education and Nursing groups underline that the higher education experience must add substantially to those competences, and must indeed give a whole new cast to them. This will not surprise given the importance of interpersonal abilities for those fields

The ways in which such competences can be developed start from making students aware of the fact that they have much to learn in this field, i.e. with encouraging a self-critical evaluation of their existing knowledge and behaviour patterns. Another important aspect is for the student to find out whether what they believe they said was understood that way by others. An aim of these activities is to develop awareness and confidence in their interpersonal know-how in the students. There is also a more «knowledge based» aspect to the development of interpersonal skills which is the subject of reading and research as learning activities. All the competences developed are put into play in practice when the students actually enter the workplace in a training setting. Students in this case will observe role models in action and analyse what they see and hear; students also keep a personal diary or log of their experiences and observations.

Results can be assessed fairly effectively in the context of the activities mentioned. Some teachers consulted by the Education group were sceptical about whether these skills could really be taught and learned formally or accurately assessed. However, most teacher education programmes make use of competence-based assessment procedures to assess the classroom practice elements of courses. These include formal

assessment of the students' competence in interpersonal areas such as questioning, classroom management, teacher-pupil relations, and teamwork with colleagues and so on. The strategies outlined certainly have the merit of creating an environment in which interpersonal skills can be explicitly considered and their development targeted.

It is stated that students are aware of whether they have been successful in acquiring the appropriate interpersonal skills when they feel confident in groups and in their practice teaching. This feeling of confidence may be of varying value in different countries as an indication of successful achievement. The perception and feedback of others, particularly learners, would seem to be more significant. The importance and range of communication skills for Nurses is made explicit in programme outlines and assessment procedures.

Overall, on the basis of the reports available, it appears that interpersonal skills may not be taken sufficiently into consideration by higher education academics, with the exception of those in whose subject area those competences or skills are thought to be fundamental. This is not surprising, considering that interpersonal skills are perhaps exactly the kind of competence that traditional university education ignored and which nonetheless are of great importance in the educational process. It was assumed that students would «pick up» appropriate interpersonal skills as they progressed to maturity. This may be the case in wholly mono-cultural contexts, but how many of those are there in 21st century Europe, or, indeed, 21st century anywhere? It is not proposed here that all subject areas imitate the Education, Nursing and Business Studies SAGs in the emphasis given to this group of skills and competences, nor that the same teaching and learning strategies be used. However, students in all subject areas would benefit if programmes were to address more explicit, analytical and practical attention to this group of competences because there is no doubt that whatever employment a graduate will find, these skills will be of use to them. Hence a useful direction of endeavour to educate the educators could be to develop awareness, both in our capacity as teachers and as learners, of this group of skills.

Ability to work autonomously

The ability to work autonomously is prized in all subject areas. Naturally in real life —post graduation— the ability to organise available time, choose priorities, work to deadlines and deliver what has been agreed on, is essential for personal and professional life and citizenship

in general. At present, the main methods reported of developing this competence in students are, in the initial stages of higher education, to ask the students to use methods other than lectures (e.g. library, field work) to learn to work autonomously; and in the final stages of the course of study, to give the student a great deal of autonomy. Some recommendations are made not to harass students with many small deadlines, or to give constant reminders of deadlines, letting the students learn to organise their time by having to do it. The final paper or dissertation is seen as a particularly useful means of ascertaining whether the student has learned to use time and organise complex tasks effectively.

Experience shows that national traditions are very different in the attitudes and practices with regard to student autonomy. In some countries, particularly where students are more mature when they start their studies, they are considered to be adults from the very beginning, attendance is not mandatory and deadlines are quite flexible, going to the point of giving students the opportunity of staking all on a final exam —for a course, for a year, or even for an entire course of study. The other extreme is based on a closely structured course organisation in which students are given specific study tasks which are checked during the semester (writing papers, or reading and studying certain material on which the student is tested) according to a strict time schedule, often coordinated with other time schedules in the department or Faculty to avoid overlap. In this case the basic strategy is to insist on the student having accomplished the task on time, in a context perhaps reminiscent of school organisation, but perhaps without the leeway permitted in school. It is interesting to see, in fact, that for some the ability to work autonomously can be developed by a sink or swim strategy, whereas for others, it can be accomplished by enforcing and insisting on the respect of a framework of task organisation decided by the teacher.

Elementary Computer Skills

As part of formal programmes of study in most subject disciplines students are required to be appropriately skilful in aspects of computing and information technology.

Within programmes of study in different subject disciplines this competence may be seen as one or more of

- a competence designed to support current study of the discipline
- a competence to enhance future employability
- a competence to enhance lifelong learning

Under each of these the content, emphasis and weight within the curriculum will vary considerably with the subject discipline. At one extreme, it may be assumed that students have the necessary competence on entry to the programme or that they will informally acquire necessary competences as they progress through their studies. This is likely to be the case where computer skills are seen only as a relatively elementary skill, both in terms of supporting study and enhancing future employability.

Not all SAGs focussed on this competence in the consultation, even though their subject is one were computer applications are very widely used, e.g. Mathematics. Those SAGs which did address this competence emphasised that the objective is that the student feel confident to approach and use a computer for any type of activity required by the subject curriculum. Detailed responses reported the need for students to be able to create and store information on any media, e-mail, search on the web, and specifically have experience in data logging of experimental apparatus to a computer and processing of the resulting data, use subject specific software (Chemistry). Word processing or special software to present in words or graphics (plotting) or calculate, evaluate and access information wherever it is available (Physics).

Students are also increasingly asked to become familiar with learning spaces to make use of new forms of e-learning via facilities such as the use of communications networks and new educational technologies. Modern e-learning management systems usually use special facilities such as virtual learning environments (e.g. WebCT, Blackboard), newsrooms, direct web-links (Education).

The competence is also a requirement for writing papers such as theses, dissertations in an adequate format, fulfilling all academic standards in terms as footnotes, literature and source review (History).

Students receive both, formal lectures and the opportunity to apply their knowledge in computer laboratories to develop their computer competences. Some SAGs report the initial provision of free access sessions after which specifically subject oriented instruction is given. Others per-

form an audit of the students´ skills at the commencement of the course and their subsequent ICT development will be self-selected with personal tutor help (Education). Formal lessons are sometimes scheduled much later in the programme (2nd or 3rd year), when specific software is being introduced. However, most of the time, basic courses are provided at the beginning of programmes by the institutions, sometimes in the format of an intensive short programme.

Web evaluation is also considered an important way of developing computing skills in a wider sense. Typically such teaching and learning sessions would start with a class-based task using an on-line site and generate student criteria for evaluation which are discussed and categorised. Some lecturers then steer students towards finding other evaluation sites as part of web search skills, others give out lecturer-selected criteria. These evaluation criteria will be tested by referring to identified web-sites.

According to the Education group[13], forms of teaching and learning to develop the computer competences of students include:

- self access programmes of self learning
- voluntarily attending taught elements linked to the various skills, graphics, web evaluation, etc. as outlined above
- modelling good practice, e.g. by giving URL references for students to follow up, by providing examples of good presentations etc.
- requiring the production of student work in various appropriate formats, often with links being established to resources available on-line
- asking students to find literature in various libraries via computer
- communicating information about the programme organization in an electronic format only, e.g. by intranet
- applying quality criteria to web-sites.

Assessment of developing computer skills is based on requiring students to demonstrate evidence of the competence e.g. by asking the students to write a presentation for interactive classes using various computer

13. On the web (http://www.ltss.bristol.ac.uk/anorak/) a staff audit questionnaire can be found - and similar ones are available for students, too, both in electronic and paper format.

software applications (Business Studies). In Education all activities for early development of ICT skills focus on skills development rather than knowledge or awareness. These include that students

- be given a task for which some missing information is available on a lecturer-made database —or they have to develop an adequate database for some given information
- see a presentation of the «skill» and then are set a task to apply it themselves
- have to use browsers or search engines to deliver required information
- have to present papers and to be assessed on the computer based competences in the delivery.

Where skills are assessed, students are informed about their achievements by grades and oral feed-back. Reference is made to all tasks students had to perform, covering demonstrations in supervised computer laboratory sessions, assigned computer based tasks, practical laboratory reports on experiments and even the final year project report (e.g. Bachelor thesis). In Education there is also the comparison made with the acquired competences at the end of a study-programme with the results of a self-evaluation audit in case the student had to do it at the start of her/his university programme.

When describing this competence SAGs use the following verbs: to feel confident in approaching, to create, to store, to make familiar with, to search, to draw, to use, to match, to enter, to produce, to save, to alter, to cut and paste, to format, to link, to conduct, to assist, to illustrate, to evaluate, to generate, to communicate, to browse, to interact, etc.

One group for whom computer use may be problematic are mature students entering university for the first time. Schools nowadays teach computer skills, and both soft— and hardware have changed out of all recognition in the past 10 years. Mature students may not, however, be computer literate, and may not feel confident enough to ask for help.

Research skills

All SAGs agreed about the importance of research skills especially, but not only, for the second cycle. However some differences emerged in the meanings attached to this in the various disciplines. While Education and

History emphasise knowledge of different research methods, Physics focuses on knowledge of the techniques used in a particular research field and Chemistry also refers to designing specific projects and evaluating their results.

No clear distinction was stated between learning how to do research with the help of a teacher and learning how to do research through the activities related to a personal research project; yet in scrutinizing programme descriptions collected, it was quite clear in Education and Nursing, at least, that specific units addressed the development of research knowledge and skills, especially in the second cycle. This is in addition to the integrated evidence based teaching that Educationists and Nursing specialists espouse. Since research competence is developed by following these two parallel paths, (in addition to continual exposure to research through reading research reports as part of programme requirements), it is sometimes difficult to draw a clear line between the teacher's role and the learners activities: The lecturer's contribution would mainly consist in presenting methodological approaches, creating an awareness of the research context, i.e. the social, biographical, and cultural background of all participants in a research project, providing input and setting up activities for the learner, who will perform these activities and will regularly get back to the teacher for advice, further input and feedback on the work done. Lecturers set up research methods courses/seminars or practical reading/writing workshops; create exercises where students conduct qualitative and quantitative data collection and practice modes of analysis, provide bibliographical materials and documents, and encourage further literature searches and links to materials already studied as part of other elements in a programme; continue to guide the reading and critical analysis of existing research/documents; supervise essays, projects, thesis; organise visits to libraries/ archives. Students participate in courses, seminars, workshops; develop a research project/thesis; review existing literature and do documentary research; collect and analyse data; obtain advice during thesis work; present and discuss work in progress; respond to and engage with commentary and critique (both written and oral); present results in class and comment on the work of colleagues; write a stipulated number of pages; and at doctoral level in all countries, defend the thesis in the presence of experts, often from the «real» world, or in an international context.

Given the types of activities performed and the regular student/teacher interaction, there is a close link between assessment by the teacher and

learners' awareness of progress made. There is agreement on two main points: first, assessment is based both on achievement during the research process —such as quality of written work submitted, participation in group activities —and on the quality of the final product— such as originality, the ability to gather documentary evidence in support of the argument, clarity and independence of thought, concern for coherence and objectivity, clarity of presentation; second, regular feedback is provided both on process and product from academic supervisors and often from peers as well.

Conclusions

The comparison of approaches to learning, teaching and assessment from the viewpoint of subject areas on a European wide scale is a new step forward in making higher education transparent. This brief overview suggests that although complex, the task is entirely feasible, given good will and good listening competences.

Bologna introduced the concept of a three cycle structure for higher education in Europe, a challenge which is being confronted across the continent. More recently an overarching «Framework for Qualifications of the European Higher Education Area»[14] has been agreed by ministers in Bergen. Academic leaders of programmes have to develop programmes which are commensurate with new «outcomes approaches» that use levels, level descriptors, qualifications descriptors, learning outcomes, and can more fairly consider the totality of student workload in terms of credits. The work of Tuning is available to assist those who wish to adopt such an approach to curriculum design, teaching, learning and assessment in higher education.

This paper is written with the intention of stimulating further discussion about the issues highlighted and the findings of this consultation with representatives of university departments in 25 different countries. It is evident that as programmes are designed in view of certain outcomes formulated in terms of competences, teaching and learning activities must be designed in such a way as to achieve those outcomes. And assessment practices must be appropriate for ascer-

14. Bologna Working Group on Qualifications Framework, *A Framework for Qualifications of the European Higher Education Area* (Copenhagen, 2005)

taining whether or not the desired result has been obtained. It is hoped that this discussion can serve as a sounding board for further evaluation in subject area groups, inside as well as outside the context of the Tuning Project.

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6. Quality enhancement at programme level: the Tuning approach

Introduction

The Tuning Project recognises the growing interest in *quality* in higher education all over Europe. There is a growth in the number of quality units at institutional level looking at internal quality as well as an increase in newly created quality agencies evaluating quality from the perspective of external agents. Furthermore, there is a firm belief among the relevant players that quality is at the heart of the construction of the European Higher Education Area. This is reflected in the ENQA policy paper *Standards and Guidelines for Quality Assurance in the European Higher Education Area* which has been endorsed by EUA, EURASHE and ESIB and approved at the Bergen summit by the European ministers of education.

The term «quality» in higher education is often ambiguous. It is commonly used as a kind of short hand, to represent different understandings of what the essential components of quality are, and what the best methods of creating or guaranteeing their existence might be. Tuning keeps in mind that the general objective of the entire higher education sector must be to create, enhance and guarantee the best and most appropriate experience of higher education possible for the student. Different strategies and various actors, working at different levels of the process certainly must be involved in the process of guaranteeing that quality in this general sense is achieved. However Tuning members believe that in final analysis the responsibility for developing, maintaining and increasing quality in higher education lies with Universities and their staff, with the contribution of students and other stakeholders. Other actors and levels have important roles in stimulating and in checking achievement, but if academic staff and students are not deeply, sincerely and intelligently involved in developing and enhancing quality, outside agents will be able register the existence of problems, but they will not be able themselves to create and implement quality programmes.

Tuning's specific task is to create common understanding and appropriate tools for Universities to develop, maintain and improve quality in higher education programmes in the broad European context. In this chapter we will concentrate on what we see as the most important strategy towards building mutual trust and understanding, as well as ensur-

ing recognition of qualifications and periods of study, that is, developing quality at the level of study programmes.

In the Bologna context any programme should be of relevance for society, lead to employment, prepare for citizenship, be recognized by academia and sufficiently transparent and comparible to facilitate mobility and recognition. Furthermore, it should be understood, valued by and thought to be sufficiently attractive to appeal to significant numbers of good students, either in a national and/or an international context. The adequacy of the approach to achieve the objectives, consistency and coherence of the constituent elements of the programme are further proofs of its quality.

The Tuning Project has provided a foundation for quality enhancement by developing appropriate transparency tools and a dialogue with stakeholders. The creation of an environment where more than 135 acknowledged European experts from nine different subject areas have been able to work together constructively, has allowed them to reach points of understanding and convergence; they have been able to reflect jointly on the meaning of quality, and respond to its growing importance in the higher education sector, offering guidance especially for the design, implementation and delivery of curricula.

Among the various criteria used in judging quality, we find the terms «fitness **for** purpose» and «fitness **of** purpose». The former, often used in quality assurance activities, means determining whether the academic strategies are suitable for achieving the declared aims of a programme. The latter means determining whether the aims of the programme are suitable or not. In the Tuning view, to develop true quality, «fitness for purpose» has meaning only when the fitness of purpose itself is thoroughly established and demonstrated. As a consequence Tuning holds that quality in programme design and delivery means guaranteeing both «fitness for purpose» (i.e. suitability for achieving the declared aims of each programme), and «fitness of purpose» (i.e. suitability of the aims of each programme: these should meet the expectations of students, academic staff, employers and the broader ones foreseen in the Bologna Process). Guaranteeing «fitness of purpose» requires a strong connection with research and academic standards as well as a consideration of employability which is only implicit in the «fitness for purpose» definition.

Tuning sees its particular role as that of encouraging *quality enhancement* at programme level and providing tools to develop it. As a working definition for Tuning, «*quality enhancement* means *a constant effort to*

improve quality of programme design, implementation and delivery". The Tuning approach is based on a set of consistent features:

- *an identified and agreed need;*
- *a well described profile;*
- *corresponding learning outcomes phrased in terms of competence;*
- *the correct allocation of ECTS credits to the units of the programme;*
- *appropriate approaches to teaching, learning and assessment.*

All this delineates and depends on establishing an on-going process based on built-in quality enhancement mechanisms and an awareness of its importance, that is, a «quality culture».

Tuning methodology

The Tuning Project has drawn attention to the importance of competences as the basis for the design, implementation and delivery of study programmes. The concept of competences implies the use of learning outcomes as well as credits, preferably ECTS credits, as guiding principles. Tuning distinguishes subject specific competences and generic competences. According to the Tuning methodology learning outcomes should be expressed in terms of competences. Learning outcomes are statements of what a learner is expected to know, understand and/or be able to demonstrate after completion of learning. They can refer to a single course unit or module or else to a period of studies, for example, a first or a second cycle programme. Learning outcomes specify the requirements for award of credit. Learning outcomes are formulated by academic staff. Competences represent a dynamic combination of knowledge, understanding, skills and abilities. Fostering competences is the object of educational programmes. Competences are formed in various course units and assessed at different stages. Competences are obtained by the student. Competences can be developed by the student to a higher (or lower) degree than expected by the learning outcomes. The level to which competences are obtained is expressed in a mark or a grade.

Study programmes which have been set up according to the Tuning methodology are output- oriented and, preferably, modularized. A modular system has the advantage of being transparent. It will promote and facilitate finding of a correct balance between learning outcomes and their related student workload expressed in ECTS credits.

For Tuning the design of a programme is a decisive element for its quality and its relevance for society. Badly designed programmes will not only have a negative effect on the output of the number of successful students and the average time to finish the programme, but also on the level of citizenship and employability of its graduates.

As part of the first phase of the project, Tuning developed a step by step approach for designing a study programme. This model identifies the following key elements:

- Necessary resources must be available;
- A need must be demonstrated and be established through a consultation process of relevant stakeholders;
- The degree profile must be well described;
- A set of desired learning outcomes have to be identified and expressed in terms of generic and subject specific competences;
- Academic content (knowledge, understanding, skills) and structure (modules and credits) must be estabished and described;
- Appropriate teaching, learning and assessment strategies to achieve the desired learning outcomes must be identified;
- An appropriate evaluation and quality assurance and enhancement system focussing in particular on the consistency and implementation of the curriculum as a whole must be set up.

It must be remembered that each programme is a unit with its own identity, defined aims and purpose. Therefore, quality indicators need to be built from within as a normal and substantial element, not in the sense that they should be standardised norms, but rather that they should be criteria which respond to the uniqueness and coherency of the specific plan:

In the framework of this paper it seems useful to discuss the elements listed above in greater detail:

A pre-condition for delivering a programme is the availability of *resources*. The quality of these resources directly affects the quality of the programme. Resources include the availability and quality of academic staff, supporting staff and, in the case of workplace learning, the workplace supervisors. The environmental conditions and facilities available for teaching and research are also relevant. Both require permanent monitoring and improvement. In the case of academic staff this means for ex-

ample that opportunities are made available and promoted for making staff aquainted with new approaches to learning and teaching.

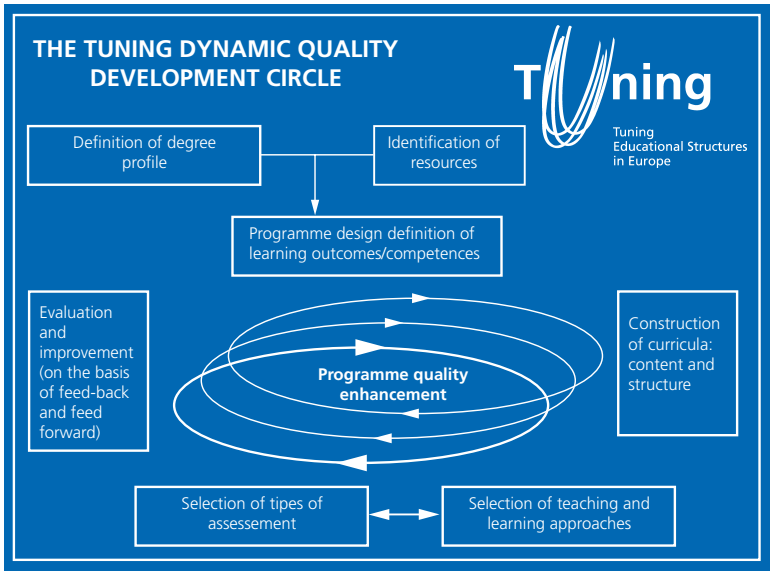
To demonstrate the *need* for a degree programme a broad consultation process is required. This consultation process should not only include the academic community, but also professionals and professional bodies and employers and other stakeholders. To obtain useful information Tuning has developed a set of questionnaires focussing on generic as well as subject specific competences. The outcome of these questionnaires forms input for the definition of international reference points for a subject area. Other input comes from the (global) academic community of the specific field. This community has a decisive role in defining the academic reference points for this field. However, in the end it is the academic staff responsible for the programme, taking into account the identified reference points and the orientation and competences of available members of staff, which actually designs the programme. Although diversity of competences and orientation is necessary in order to have quality in departments, faculties and universities, there must also be coordinating structures which guarantee coherence and make *change* possible. Crucial in this respect are the so-called change agents, e.g. directors of studies, heads of departments, executive boards and councils etc., responsible for the design, approval, delivery and management of programmes. Changes are difficult to implement when they are not widely supported. Therefore, a broad spectrum of academic staff and students' views should be consulted so that the curriculum and educational approach is understood and supported by both staff and students.

For each study programme there should be a degree or qualifications *profile* that clearly defines the aims and purposes of the programme. Further clarity can be obtained by formulating these aims in the form of intended learning outcomes (statements of what the graduates should know, understand and be able to do), expressed in terms of the subject-specific and generic competences to be achieved. Curriculum design and student assessment should be coherent with this degree profile.

The curriculum design process should consider the *academic content* and *level* to be reached but it should also consider that one major goal in higher education is to promote autonomous learning and autonomous learners —which has implications for teaching and learning methods and the overall student *workload* in terms of ECTS credits. The curriculum should not overload students with excessive and redundant content. Curriculum design should consider the employability of graduates and the development of citizenship as well as their academic and intellectual training.

An *evaluation* scheme should be in place to monitor and review the operation of each study programme. The monitoring process should involve the systematic collection and analysis of statistical information on key indicators such as examination success rates, progression of students to employment or higher degrees, student recruitment numbers, response to evaluative questionnaires, feedback of partner institutions, etc. The results should be made known within the university. Various *feedback and feedforward loops* should be in operation. These should involve students, alumni and academic staff, operating on the same or different time-scales. In particular, there should be provision for obtaining and acting on information from student questionnaires and from student representatives. The purpose of the feedback loops is to correct deficiencies in delivery and/or design of the curriculum. The feedforward loops are intended to identify expected developments, which should be taken into account when improving and/or developing programmes. In the case of programmes incorporating workplace learning or professional competences, feedback should be obtained from the stakeholders involved as to the suitability in practice of the students' competences and hence their employability.

The above listed principles for setting-up and improvement of programmes have been visualized by Tuning in the *dynamic quality development circle*: already presented above, in the discussion of Tuning methodology in chapter 1.



This model is based on the assumption that programmes can and should be enhanced on the basis not only of feedback but also of feed forward by taking into account developments in society as well as the academic field concerned. This is illustrated by the progressive spiral loops in the diagram.

In order to facilitate institutions in programme design, implementation and delivery, Tuning has developed a comprehensive List of key questions to be considered in initiating or developing a degree programme. Its usefulness has already been validated in practice as is shown in the examples annexed to this paper. This tool is included in this paper as Annex 1

Because society is always changing and academic fields are developing, education has to be a dynamic process. Tuning is convinced that periodic external or internal quality assurance checks are insufficient for developing and maintaining true quality. The focus, rather, should be on the constant improvement and updating of the programme. It follows that the evaluation process(es) must be carried out in a particular way. Individual teaching and learning units/modules should not be assessed and evaluated by themselves, but rather in the framework of the overall programme.

A curriculum evaluation can be considered under three main headings:

- the educational process,
- the educational outcome and
- the means and facilities required for programme delivery.

Each of these main headings contains a number of elements to be considered:

Educational Process:

- degree profile (aims of the educational programme)
- learning outcomes to be achieved and competences to be obtained
- degree/educational programme structure and order of programme components to ensure progression
- coherence of degree/educational programme

- division of workload over the semester and the academic year
- feasibility of programme (check)
- teaching, learning and assessment methods
- connection with secondary education
- international cooperation and student mobility

Educational outcome:

- study rate, cessation of study and switch-overs (output)
- output of 1st and 2nd cycle
- employability

Means and facilities required:

- structural and technical facilities
- staff and material means
- student support: student counsellors

The different elements identified above are proposed in a *Checklist for Curriculum Evaluation*. The checklist is based on 14 «premises» or statements which describe an ideal situation. In practice this ideal will be difficult to realize, but it is *the responsibility of academic staff and students* to come as close to it as possible. The Checklist is annexed to this chapter as Annex 2. It can be used in combination with the *List of Key Questions* included as Annex 1. Both should be seen as practical tools to help programme committees to design, implement, deliver, monitor and enhance study programmes.

Tuning's further role in quality enhancement

Besides offering methodological frameworks and practical tools for the design, implementation and delivery of study programmes, Tuning has a further role in that it is a pan-European network of academics. The potential role of networks with regard to the issue of quality is mentioned in the Berlin Communiqué. Tuning is a network of academics representing both European countries and their own institutions, which formally selected them for the project. The key role of academics within institutions is stressed in the Trends III report, where it is said:

«If the enormous potential of using the Bologna objectives as a trigger for long-needed, fundamental and sustainable reforms of higher education in Europe is not to be wasted, the voice of the academics, within the institutions, will need to be heard and listened to more directly in the Bologna Process».

Networks of academics can significantly contribute to the appreciation of the value of quality as well as to the elaboration of concepts in terms that are meaningful in different cultural contexts. This, in relation with quality, is a great asset, as the creation of shared meanings can contribute greatly to the development of a quality-oriented European Higher Education Area. Networks can also have an effective role in the dissemination and socialization of these concepts.

The Tuning Project works in a European, transnational context, where recognition is one of the central issues. Recognition based on comparability and transparency is at the core of the Tuning Project. A basic task of Tuning is to provide useful reference points for creating comparable, readable, programmes based on degree profiles described in a language of learning outcomes. Learning outcomes are expressed in terms of generic and subject-specific competences, with a clear definition of level and a well-focused teaching, learning and assessment approach. This is a significant step forward along the path towards recognition, as it provides a basis on which to:

- Formulate reference points based on internationally shared concepts and contents regarding what constitutes each subject area in the broad sense, distinguishing specializations and study programmes based on mapping;
- Develop mutually shared criteria and methodologies regarding quality assurance at programme level;
- Offer elements of comparability at national and international level;
- Build trust in internal evaluation systems that are mutually understood and jointly built;
- Enhance interest for recognition procedures at programme level within the institutions;
- Facilitate ENICS and NARICS in their work of recognizing the degrees;

- Use available resources effectively to develop systems of reference and data keeping which can be compared and understood in the different countries.

As a transnational network, Tuning provides a unique platform for implementing the *principles* which have already been identified as *underpinning quality in European higher education*:

Relevance. In a student-centred educational system obviously a key value for any degree programme is its relevance for students as well as society. A programme should be based on academic, professional and social development, intellectual endeavour, employment and citizenship in an European environment. Being competence-based, the Tuning approach facilitates dialogue with employers and social actors. It pursues the identification of relevant academic and professional profiles and demands clarity about the needs that degree programmes intend to meet.

Comparability and compatibility. Using the Tuning methodology European degree programmes can be designed as compatible and comparable with other European programmes, through the use of common reference points, jointly agreed and expressed in generic and subject related competences. This methodology allows for true comparability, while showing a clear respect for the diversity of curricula, paths of learning and culturall ethos. The inclusion and development of ECTS also provides higher levels of comparability and compatibility through the use of student workload as a tool for planning and monitoring whole degree programmes as well as their component parts.

Transparency. This is a necessary characteristic of any study programme and must be built into it from the beginning. There must be transparency in the outcomes, in the process, in the learning resources, in the quality systems and in data maintenance. Transparency is connected to readability, requiring the use of a language which can be understood by students, employers and other stakeholders alike in a transnational society. Transparency includes a correct use of ECTS credits for defining student workload and of the Diploma Supplement as well as of the other ECTS tools.

Mobility and transnational education. The creation of the European Higher Education Area requires a reliable and high quality mobility system. In turn, the experience of mobility contributes greatly to the full develop-

ment of a strong and vital European Higher Education Area. Physical mobility, for well-structured periods of study as well as for complete degree programmes, increases quality with respect to the European dimension of education, the capacity for professional employment in the European labour market and European citizenship. Transnational education is a powerful force for bringing institutions together and for developing common quality enhancement mechanisms.

A high quality system of mobility must guarantee full recognition of periods of studies and degrees, as well as appropriateness for the student of the activities undertaken at a host institution. ECTS is the key system on which to build recognition. Tuning has facilitated recognition by fully developing the ECTS accumulation function, through the consistent use of learning outcomes, expressed in terms of competences, as well as workload.

Attractiveness. In a European education area which seeks to be attractive to third countries quality must be guaranteed. The quality mechanisms developed at the national level by the different countries must be combined and further developed in order to be perceived and understood as a European system. The Tuning Project provides a quality enhancing methodology for designing degree profiles and developing curricula, including those for joint degrees, formulating learning outcomes and competence and measuring student workload. It already provides a common language for the teaching, learning and assessment of competences, which will be further developed to include quality indicators.

Universities are creating their own methods and systems for the development of an internal quality culture. They need to monitor the start-up and the development of their academic activities and programmes in a way which is coherent with core academic values and with their specific mission. Tuning provides an approach for designing or redesigning and developing study programmes according to the tenets of the Bologna process.

The general results of Tuning provide useful input for all Higher Education institutions, while the results regarding subject areas offer specific European reference points which can be used for quality enhancement at disciplinary level.

The subject area/disciplinary level is the appropriate context for:

- using the experience of academics representing different educational traditions;
- requesting the views of professional bodies and other related stakeholders in each field, thus maintaining a dynamic dialogue about social relevance and adequacy;
- focussing on developments in each subject area, thus developing a dynamic approach to thresholds and reference points;
- relating courses and degrees to maps of professions and academic and professional profiles in an international context;
- promoting a shared vision of quality development within a subject area while recognising and respecting the diversity of the approaches being used;
- comparing curricula and approaches to learning, teaching and assessment, in order to map the areas, facilitate mutual understanding, identify core competences and common standards at the different levels;
- encouraging employability studies at the European level with an emphasis on diversity and innovation;
- contributing significantly to the development of cycle(level) descriptors used in the construction of national and European Frameworks of Qualifications.

It is within a subject-area that the level of academic development of a programme can be best understood and measured in terms of quantity as well as quality.

Using Tuning to enhance quality in programme design and delivery

To sum up, Tuning offers powerful tools for enhancing quality in programme design and delivery. Of course, quality is also affected by elements depending on national, local or institutional contexts. Nonetheless Tuning findings and Tuning tools can be used by institutions and their staff everywhere to manage programme development in the Bologna context in an effective way that fosters learner-centred cultures.

Tuning provides an overall framework for developing student-centred degree programmes. It shows how to design programmes with full consideration the final result —that is, how the graduate will be equipped

for life in the real world after completing the learning process— while keeping in mind professional and personal development as well as citizenship. It also makes it possible to describe programmes by using a language that is understood in the same way across Europe and beyond, thus ensuring comparability, transparency and attractiveness.

In fact, Tuning's starting point is to design programmes which can achieve meaningful learning outcomes within a given time framework. Learning outcomes are not formulated in terms of disciplinary contents but rather in terms of knowledge and abilities acquired. Such knowledge and abilities are expressed and conceptualised as subject specific and generic competences, that is, what a student will know and be able to do at the end of a given learning process.

The Tuning competence-based approach makes it possible to consult stakeholders, including students, and to describe in clear language what the specific goals of each programme are. These «goals» constitute the degree profile, which is connected to the professional role the graduate is expected to carry out and to the academic standards s/he is expected to achieve in the subject area. By using workload-based credits, learning and teaching activities can be organized in a consistent and efficient way.

Any degree programme must develop subject specific competences, that is, knowledge, skills, abilities and values, specifically needed for the subject area(s). Tuning already provides discipline-based reference points for subject specific competences in many subject areas: it has established an approach and a common language through which similar tools are being developed for the remaining subject areas.

Each of the subject areas already involved in Tuning has also defined the level to which the various competences must be developed in a first or a second cycle degree. These are general descriptions which can be used for reference in any institution or in any country, while respecting any national or local academic tradition and any cultural, economic or social consideration. In the future, Tuning expects to produce cycle-level descriptors for the third or doctoral cycle as well.

Particularly novel in Tuning is the focus on «generic competences», which until now have not been explicitly taken into account in most academic programmes. For each programme choices will be made about which generic competences are most relevant for its graduates and appropriate

learning/teaching/assessment activities will be organised on that basis. Tuning not only provides a common language for defining generic competences; it also furnishes many concrete examples from a wide variety of subject areas on how to foster and enhance them.

Naturally, in planning learning and teaching activities to achieve the intended learning outcomes, institutions must be constantly aware of the time framework established. Workload-based ECTS credits make it possible to plan activities effectively as they take into account all the time that must be dedicated to learning, teaching and assessment activities and hence provide a crucial tool for effective programming.

ECTS credits are only one of the Tuning tools for creating environments in which the necessary learning outcomes can be achieved. Each country, each discipline and even each institution has its own teaching/learning and assessment tradition. Tuning has put these traditions into contact: by sharing knowledge and experience, a wide range of effective methods and techniques for forming individual competences has been gathered and described. This material concerns both subject specific and generic competences and comes from many subject areas. It is available for institutions to use, in order to develop their own approaches. Tuning findings indicate that using a variety of approaches to learning and teaching in each programme gives the best results.

Assessment should be the crucial tool for understanding whether a degree programme is successful. It should be based on ascertaining whether the learner has actually achieved the planned goals. Since these are formulated in terms of learning outcomes expressed in competences, assessment must be conceptualised and organised in such a way as to evaluate to what extent those competences have been achieved.

Again Tuning has gathered and elaborated examples of good practice coming from a variety of countries and subject areas. These are available for institutions and can be utilised to design assessment methods suitable to a competence-based approach.

Naturally, programme design and delivery must be continually monitored and evaluated to find out whether the aims are actually being achieved and whether they continue to be appropriate or should take into account changes and developments in the subject areas and in society. An increasingly important element will be changes and development in each subject area in the pan-European context. The Tuning tools and ap-

proach will allow institutions to monitor, evaluate and improve both their own programmes and their joint and international degree programmes in this broader context. Thus Tuning provides a path for quality enhancement at programme level.

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Annex 1

TUNING List of Key Questions for Programme Design and Programme Delivery, Maintenance and Evaluation in the Framework of the Bologna Reform

Programme design

Items	Key questions
Degree profile	• Has the **need for and the potential** of the (new) degree programme been established comprehensively fully and clearly? • Does it aim to satisfy established or new professional and/or social demands? • Was there a **consultation** with stakeholders? Did they identify the need for the degree programme? • Was the **approach** used for the **consultation adequate**? Were the groups selected the relevant ones for the degree programme considered? • Are the **definition** of the profile, the identification of the **target groups** to be addressed and its place in the national and international setting **clear**? • Is there convincing evidence that the profile will be **recognized** in terms of **future employment**? Is it related to a specific professional or social context? • Is this profile **academically challenging** for staff and students? • Is there **awareness of the educational context** in which the programme is offered?
Learning outcomes	• Have **clear and adequate learning outcomes** been identified at the level of the programme as a whole and of each of its components? • Will they result in **the profile** identified? Are they adequately distributed over the various parts of the programme? • Is the **progression and coherence** of the programme and its units sufficiently guaranteed? • Are the learning outcomes **formulated in terms of subject-specific and generic competences** covering knowledge, understanding, skills, abilities and values? • What guarantee is there that the learning outcomes will be **recognized and understood** within and outside Europe?

Items	Key questions
Competences	• Are the **competences** to be obtained by the student clearly **identified and formulated**, both subject-specific and generic? • Is the **level** of the competences to be obtained appropriate for this specific degree programme? • Are the competences to be gained expressed in such a way that they can actually **be measured**? • Is **progression guaranteed** in the development of the competences? • Can the competences obtained be assessed adequately? Is the **methodology of assessment** of the competences clearly specified and suitable for the **expressed learning outcomes**? • Are the approaches chosen for **learning and teaching** the competences clearly **specified**? What evidence is there to assure that the results will reached? • Are the approaches chosen sufficiently **varied and innovative/creative**? • Are the competences identified **comparable and compatible** with the **European reference points** relative to the subject area? (if applicable)
Level	• Has the **entrance level** of potential students been taken into consideration when identifying their learning needs? • Does the level of learning outcomes and competences correspond to the **level(s)** of the degree (cycle) foreseen in the **European and National Qualification Framework**? • If sublevels are included, are these described in terms of learning outcomes expressed in competences? • Are levels described in terms of: —acquiring knowledge, understanding, skills and abilities —applying knowledge, understanding, skills and abilities in practice —making informed judgments and choices —communicating knowledge and understanding —capacities to continue learning

Items	Key questions
Credits and Workload	• Is the degree programme **ECTS based**? Is it in alignment with the **ECTS key features**? • Have **credits** been allocated to the programme? How is the adequacy of this **allocation** guaranteed? • How are credits related to the **learning outcomes** of this programme? • How is the **correlation** between **workload and credit** allocation checked? • How is a **balanced** student **workload** guaranteed during each learning period in terms of learning, teaching and assessment activities? • What mechanisms are used for **revision** of credit allocation and learning, teaching and assessment activities? How are the students involved in this process? • Is **information** on the programme (modules and/or course units) presented as described in the **ECTS Users' Guide**? • How is **student mobility** facilitated in the programme? • How are **students advised** about mobility? • How are the **key documents of ECTS** used for mobility? • Who is responsible for **recognition** and which are the procedures used?
Resources	• How is the **formal acceptance** of the programme and the resources required to deliver it, guaranteed? • Is the **staffing** (academic and supporting staff and workplace supervisors) for delivering the programme guaranteed? Does the programme require the use of teaching staff from outside the department/institution? • Is **staff development** foreseen in terms of (new) approaches to learning, teaching and assessment? • How are the necessary **structural, financial and technical means** (class rooms, equipment, health and safety procedures etc.) guaranteed? In the case of workplace learning/placements, are there sufficient and suitable **placements** guaranteed?

Programme delivery, maintenance and evaluation

Items	Key questions
Monitoring	• How is **the quality of delivery** of the programme and its components monitored? • How is **staff quality and motivation** for the delivery of the programme monitored? • Are there systems in place to **evaluate** the quality of the learning environment in **workplace learning/placements**? • s the **qualiy of class rooms and the equipment** (including workplace environments) required to deliver the programme sufficient? • How is the **entrance level** of potential students monitored? • How is **student performance** monitored in terms of quality of learning outcomes to be obtained/competences to be achieved and time required to complete the programme and its components? • In what way is the **employability** of graduates monitored? • How is the **alumni database** organized? • Are data collected on the **graduates' satisfaction** with the programme?
Updating	• How is the system for **updating/revision** of the degree programme organized? • In what way can changes related to **external developments** in society be incorporated in the programme? • How is **staff development** related to programme updating organized and guaranteed?
Sustainability and responsibility	• How is the **sustainability** of the programme guaranteed? • How is it guaranteed that the relevant bodies take **responsibility for sustaining and updating** of the programme?

Items	Key questions
Organisation and Information	• How is the **updating of information** regarding the degree programme organized and guaranteed? • How is the adequacy of the system of **student support, advising and tutoring** ensured? • Is a **Diploma Supplement** issued to the students automatically and without charge in a widely spoken European language?

Annex 2

TUNING Checklist for Curriculum Evaluation

The following elements can be distinguished within the framework of curriculum evaluation: the educational process, the educational outcome and the means and facilities required for programme delivery.

Educational Process:

- degree profile (aims educational programme)
- learning outcomes and competences to be achieved
- degree/educational programme build-up and order of programme components (to realize progression)
- coherence of degree/educational programme
- division of workload over the semester and academic year
- feasibility of programme
- teaching, learning and assessment methods
- connection of secondary and higher education
- international cooperation and student mobility

Educational product/outcome:

- study rate, cessation of study and switch-overs (output)
- output of 1st and 2nd cycle
- employability

Means and facilities required:

- structural and technical facilities
- staff and material means
- student support: student counsellors

Educational process

1. Degree/programme profile

Premises:
The degree programme has a clearly defined profile which is based on the demands set by an academic degree on the one hand, and by the needs of society on the other hand by taking the future labour-market of graduates (of that particular programme) into consideration.

Questions:
To what extent do the available data show that the programme profile meets the demands set to it? If necessary, which adjustments are thought to be desirable?

2. Learning outcomes and competences at programme level

Premises:
The degree programme has clearly defined learning outcomes that reflect the programme profile. The learning outcomes are described in terms of competences to be attained by the students (knowledge, understanding and skills).

Questions:
To what extent do the learning outcomes and competences to be attained by the students correspond with the programme profile? If necessary, which adjustments are thought to be desirable?

3. Learning outcomes and competences of the (separate) programme components

Premises:
For each degree programme component a total of about five learning outcomes has been formulated, which clearly contribute to realizing the learning outcomes at programme level. The learning outcomes are described in terms of competences to be attained (knowledge, understanding and skills).

Questions:
Are the learning outcomes (explicitly) mentioned in the course syllabus of each programme component (module or course unit), and explained further when required? To what extent is it clear from the descriptions

that specific competences are practised? Is indicated which level of the competences is aimed for.

4. Curriculum set-up and the sequence of programme components/educational modules

Premises:
The curriculum is structured in such a way that coherence is assured within the total programme, in the various phases of the programme, and the separate programme components, and continuous progression is made with regard to the generic and subject-specific competences that have to be attained in terms of knowledge, understanding and skills.

Questions:
To what extent is it clear in practice that the programme is structured in such a way that coherence is assured and that progression is made with regard to knowledge, understanding and skills in relation to the learning outcomes and competences to be attained? If necessary, which adjustments are thought to be desirable?

5. (Division of) workload

Premises:
The programme is structured in such a way that a well-balanced division of the total workload is realized for the programme as a whole, for and within the separate academic years, and for and within both semesters. The calculated workload per programme component must correspond with the time that a typical student needs to attain the required learning outcomes.

Questions:
To what extent is it shown in practice that the total workload is divided according to the premises in the above? If necessary, which adjustments are thought to be desirable?

6. Feasibility of degree programme

Premises:
The programme is set up in such a way that it is feasible for a typical student (to complete the programme within the given time frame). This implies a good mixture of teaching, learning and assessment methods, no unnecessary impediments between programme components, and sufficient supervision/tutoring by the teaching staff.

Questions:
To what extent are guaranteed that a well-balanced combination of teaching and learning and assessment methods is applied, sufficient supervision by teaching staff is available, and entrance requirements for programme components are only required when a motivation with regard to educational content can be given? If necessary, which adjustments are thought to be desirable?

7. Teaching, learning and assessment methods

Premises:
The teaching, learning and assessment methods used are varied and have been chosen because they are particularly well-suited to achieving the formulated learning outcomes and competences.

Questions:
To what extent does the available information, in particular the educational and assessment regulations and course syllabi, assure that the formulated premises are being met? If necessary, which adjustments are thought to be desirable?

8. Connection of secondary and higher education

Premises:
The programme has been set up so that it takes into consideration the entrance level of students. For first cycle programmes it concerns the connection to secondary education, and for second cycle programmes it concerns the connection to first cycle programmes (that give entrance to the second cycle programmes).

Questions:
To what extent is made certain that the programme is set up in such a way that a good transition is provided with regard to entrance qualifications for first and second cycle? If necessary, which adjustments are thought to be desirable?

9. International cooperation

Premises:
There is structural cooperation with foreign partner institutions. This cooperation can be joint degree programmes and/or facilitating student exchanges and recognizing the academic achievements undertaken at the partner institutions.

Questions:
In what way is it guaranteed that students do not get behind schedule if they take part of their programme at a foreign partner institution, except when they are responsible for it themselves (e.g. because they have changed their programme without consultation, or because they have not completed programme components successfully). If necessary, which adjustments are thought to be desirable?

Educational product

10. (Realized) output of 1st or 2nd cycle

Premises:
The Faculty/School aims to achieve the following aims: successful completion of the first year of study xx% (maximum two years after starting the programme), completion of a first cycle degree based on a completed first year xx% (four years after starting the educational programme), completion of a second cycle degree xx% (two or three years after starting the educational programme).

Questions:
Does the programme realize the set percentages? If not, why? Which suggestions are made in that case to bring about improvement?

11. Employability

Premises:
The degree programme meets a need in society as can be concluded from the fact that the transition to the labour market in a broad sense is good.

Question:
Do graduates find (suitable) employment within a reasonable period of time that fits the profile and level of the degree programme?

Required facilities and means

12. Structural and technical facilities

Premises:
Sufficient structural and technical facilities and provisions are available for the delivery of the degree programme.

Question:
Are any bottlenecks apparent in practice in the delivery of the programme with regard to facilities and provisions?

13. Material and personnel means

Premises:
For the delivery of the programme sufficient quantitative and qualitative personnel means are made available in terms of teaching and supporting (administrative and technical) staff. Each programme/organizational unit has sufficient means for the delivery of the programme (guest lecturers, materials etc.).

Question:
To what extent are the assigned means sufficient in practice to deliver the programme according to its original premises and set-up?

14. Student support, advising and tutoring

Premises:
A system for student support, student advising and tutoring is available to students.

Question:
In what way is the demand/need met for an adequate system of student support, advising and tutoring?

7. Glossary of Tuning terms

(November 2006)

Assessment

The total range of methods used to evaluate the learner's achievement in a course unit or module. Typically, these methods include written, oral, laboratory, practical tests/examinations, projects, performances and portfolios. The evaluations may be used to enable the learners to evaluate their own progress and improve on previous performance (formative assessment) or by the institution to judge whether the learner has achieved the learning outcomes of the course unit or module (summative assessment). See also **Continuous Assessment/Criterion Referenced Assessment.**

Assessment criteria

Descriptions of what the learner is expected to do and to what level, in order to demonstrate that a learning outcome has been achieved and to what extent**.** The criteria are usually related to the cycle and/or level descriptors for the module being studied in the discipline concerned. They are normally presented to the students in course catalogues or similar documentation along with the intended learning outcomes, syllabus, etc., at the beginning of the course unit.

Cohort or class

A group of students that started a particular degree programme or course at the same time.

Competences

Competences represent a dynamic combination of cognitive and metacognitive skills, knowledge and understanding, interpersonal, intellectual and practical skills, and ethical values. Fostering these competences is the object of all educational programmes. Competences are developed in all course units and assessed at different stages of a programme. Some competences are subject-area related (specific to a field of study),

others are generic (common to any degree course). It is normally the case that competence development proceeds in an integrated and cyclical manner throughout a programme.

Contact hour

A period of 45-60 minutes of teaching/learning activity in which a staff member is engaged face to face with a learner or group of learners.

Continuing professional development/education

Continuing professional development (CPD) is the means by which people at work maintain, improve and broaden their knowledge and skills and develop the personal qualities required in their professional lives. Some may wish to do this through undertaking a complete further degree programme, while others may opt to take specific modules or course units appropriate to their learning and professional interests. See also **Lifelong Learning.**

Continuous assessment

A system of assessment in which work is assessed throughout the programme or course unit and does not rest on a final examination. Marks achieved often contribute to a final overall mark the final assessment total for the student, either for the unit, the year of study or for the programme.

Convergence

Convergence involves the voluntary recognition and adoption of general policies for the achievement of common goals. Convergence in the architecture of national educational systems is pursued in the Bologna process. The Tuning Project seeks to identify points of convergence while recognizing and sharing knowledge about the variety of practice with broad agreed frameworks.

Course

Often used as a synonym for programme or course unit. Tuning has adopted the term programme to designate a complete programme of study leading to a degree, and course unit for smaller units of structured teaching and learning in such a programme.

Course unit

A self-contained, formally structured learning experience. It should have a coherent and explicit set of learning outcomes, expressed in terms of competences to be obtained, and appropriate assessment criteria. Course units can have different numbers of credits, although it is recommended that units carry a uniform number of credits or a multiple thereof. These units, with thesis work and work placements where appropriate, are the building blocks of programmes.

Coursework

Coursework refers to the required - normally assessed - learning activities within a course unit or module.

Credit

The «currency» used to measure student workload in terms of the time required to achieve specified learning outcomes. It enables staff and students to assess the volume and level of learning, based on the achievement of learning outcomes and the associated workload measured in time.

Credit can be awarded to a learner in recognition of the verified achievement of designated outcomes at a specific level through work based learning or prior learning as well as through coursework. Credit cannot normally be lost once achieved, although in particular circumstances an institution can lay down that credits must have been awarded within a certain timeframe to be recognized as part of the study programme. This will be the case in subject areas where knowledge and skills are subject to rapid change, e.g. Informatics, Medicine, etc. See also **Student Workload** and **Intended Learning Outcomes**.

Credit accumulation

Credit accumulation is the process of collecting credits for learning within degree programmes. In a credit accumulation system a specified number of credits must be obtained in order to complete successfully a study programme or part thereof, according to the requirements of the programme. Credits are awarded and accumulated only when the successful achievement of the required learning outcomes is confirmed by assessment. Learners can use the credit accumulation system to transfer

or «cash in» credits achieved from work-based learning/different programmes within and between educational institutions. Credits are also transferable between programmes in the same institution, between different institutions within the same country, or internationally (often with certain limits about the proportion of the total that can be transferred). The process allows learners to study individual units and modules without immediately achieving an academic award, and also allows for the award of interim awards where students do not complete a full programme leading to the award of a degree. In every case it is the Institution that will award the degree that decides which credits earned elsewhere can be accepted as part of the work required for the degree.

Credit level

An indicator of the relative demands of learning and of learner autonomy in a given course unit or module. It is typically based on the complexity and depth of learning and is sometimes associated with the year of study (e.g. level 1/2/3 over a three year programme), or the type of course content. (e.g. Basic/Intermediate /Advanced).

Criterion-referenced assessment

In this form of assessment particular outcomes, i.e. knowledge, understanding, skills, abilities and/or attitudes are specified as criteria for «passing» the assessment. Criterion-referenced assessment can be associated with the desired and/or «threshold minimum» of the learning outcome to be achieved. In norm-referenced assessment learners are evaluated in relation to one another, usually within their cohort. The latter system of assessment, alone, is not compatible with competence based curricula.

Cycles

All European higher education qualifications are located within three cycles. One of the objectives indicated in the Bologna Declaration was the «adoption of a system based on two main cycles, undergraduate and graduate». Doctoral studies are now included in the Bologna structure and referred to as the third cycle.

Cycle (level) descriptors

Generic statements of the broad expected outcomes of each of the three cycles. A good example of general cycle (level) descriptors are the

so-called Dublin Descriptors, which have been developed by a group of experts, the Joint Quality Initiative. (JQI). These descriptors have served as one of foundations (along with ECTS) for the Framework For Qualifications Of The European Higher Education Area. See also **Dublin Descriptors, European Qualifications Framework** and **Level Descriptors**

Degree

A formal qualification awarded by a higher education institution after successful completion of a prescribed study programme. In a credit accumulation system the programme is completed through the accumulation of a specified number of credits awarded for the achievement of a specific set of learning outcomes.

Degree profile

A description of the character of a degree programme or qualification. This description gives the main features of the programme which are based on the specific aims of the programme, how it fits into the academic map of disciplines or thematic studies and how it relates to the professional world. Deciding to institute a new degree profile should normally be the outcome of a process of analyzing the needs of society combined with those of the specific subject area as well as the financial and personnel means which can be made available to establish the programme.

Diploma Supplement

The Diploma Supplement is an annex to the official qualification documentation which is designed to provide more detailed information on the studies completed according to an agreed format which is internationally recognised. For reasons of transparency and comparability it is important that this format, which has been drawn up by the European Commission, Council of Europe and UNESCO/CEPES, be followed exactly.

Doctorate or doctoral degree

A qualification awarded after completion of third cycle study. It includes a substantial amount of original research work which is normally presented in a thesis.

Dublin descriptors

The Dublin Descriptors provide very general statements of typical expectations of achievements and abilities associated with awards that represent the end of a Bologna cycle. General level descriptors have been developed for the «short cycle within the first cycle» and the first, second and third cycle. The descriptors consist of a set of criteria, phrased in terms of competence levels, which enables to distinguish in a broad and general manner between the different cycles. The following five sets of criteria are distinguished:

- Acquiring knowledge and understanding
- Applying knowledge and understanding
- Making informed judgements and choices
- Communicating knowledge and understanding
- Capacities to continue learning

The Dublin descriptors have been developed by an international group of experts, which has named itself the Joint Quality Initiative (JQI). The work of the JQI and Tuning is considered complementary by both parties.

ECTS (European Credit Transfer and Accumulation System)

ECTS is a learner-centred credit system based on the student workload required to achieve the objectives of a programme of study and on the principle that 60 credits constitute the workload of a full-time student during one academic year. The student workload of a full-time study programme in Europe represents in most cases a student workload of around 1500 to 1800 hours per year. Credits are allocated on the basis of an official plan. If a study programme officially exceeds the normal length of an academic year more credits can be allocated. This might be the case for programmes at second cycle level. A «full calendar year» programme designed to require 50 to 52 weeks of full-time study (no summer holidays) might have credits up to 75 depending on the learning outcomes and associated workload.

As well as being a system for facilitating the mobility of students across Europe through credit accumulation and transfer, ECTS can also facilitate programme design and development, particularly in respect of overseeing the demands on students of concurrent course units.

European Qualifications Framework

A European Qualifications Framework (EQF) is an overarching framework that makes transparent the relationship between European national (and/or sectoral) educational frameworks of qualifications and the qualifications they contain. It is an articulation mechanism between national frameworks.

At present two European Qualifications Frameworks exist. One focuses on Higher Education and has been initiated as part of the Bologna Process, the other focuses on the whole span of education and has been initiated by the European Commission. The first framework is named *A Framework for Qualifications of the European Higher Education Area,* abbreviated as EQF. The second extends across all areas including that of higher education and is called *European Qualifications Framework for Lifelong Learning*, abbreviated as EQF for LLL.

The EQF for HE, adopted by the 45 countries participating in the Bologna Process, is a system that aims to:

- Enable learners (citizens, employers, etc.) across Europe to understand the full range and relationship between the various national, local and regional European higher education qualifications
- Promote access, flexibility, mobility, collaboration, transparency, recognition and integration (links) within, and between, European higher education systems.
- Defend diversity, in the content and delivery of educational programmes and therefore national, local, regional and institutional academic autonomy.
- Improve the competitiveness and efficiency of European higher education

See also **National Framework of Qualifications.**

Examination (Exam)

Generally a formal written or oral test taken at set points (e.g. end of a semester or term, mid-semester or term) or at the end of a programme, module or course unit.

Evaluation

Evaluation of teaching and academic studies in a subject or department and the related degree programmes comprises all those activities which aim at assessing quality and fitness for purpose and of purpose. Strengths and weaknesses of education and training can be identified by stocktaking, analysis and proposals formulated to ensure the sustainability of quality. Evaluation may be carried out through both internal and external procedures. Internal evaluation comprises the systematic collection of administrative data and obtaining feedback from staff, students and graduates, as well as holding structured conversations with lecturers and students. External evaluation may include visits by a review team to the department in order to review the quality of the academic studies and teaching, the use of external examiners, external accreditation, etc.

A significant element in enhancing quality is ensuring that internal and external procedures are used to improve student learning.

First cycle degree

A higher education qualification awarded after successful completion of first cycle studies which, according to the Bologna Declaration, should normally last a minimum of three years or 180 ECTS credits.

Grade/Mark

Any numerical or qualitative measure, based on well-defined criteria, which is used to describe the results of assessment in an individual module or course unit or in a complete study programme.

Higher education

Higher education applies to academic programmes of study that may be entered by students holding either an appropriate school leaving certificate from an upper secondary school or other relevant professional qualifications or approved prior learning and/or prior experience. Providers may be universities, universities of professional studies, higher education institutions, colleges, polytechnics etc.

Intended learning outcomes

Intended learning outcomes are statements —made by the academic staff— of what a learner is expected to know, understand and/or be able

to demonstrate after completion of a process of learning. Learning outcomes must be accompanied by appropriate assessment criteria which can be used to judge whether the expected learning outcomes have been achieved. Learning outcomes, together with assessment criteria, specify the requirements for the award of credit, while grading is based on attainment above or below the requirements for the award of credit. Credit accumulation and transfer is facilitated if clear learning outcomes are available to indicate with precision the achievements for which the credit will be awarded.

Levels

Levels are understood to be a series of sequential steps to be taken by the learner (within a development continuum) expressed in terms of a range of generic outcomes, within a given programme.

Level descriptors

A level descriptor is a statement that provides an indication of the depth and extent of learning expected at a specific stage in a programme. They are a guide to the kind of demands or expectations it is appropriate to make of learners at each of the designated levels within a programme. The descriptors guide the learner, teacher and curriculum with respect to the complexity, relative demand and learner autonomy. These general descriptors can be applied to specific subject disciplines and ways of learning. Level descriptors are useful for curriculum design, assignment of credit, validation, guidelines for recognition of learning from experience and of non formal learning and for staff development.

Module

The term module has different meanings in different countries. In some it means a course unit; in others a module is a group of course units. For clarity, In Tuning the ECTS definition is used: A module is defined as a course unit in a system in which each course unit carries the same number of credits or a multiple thereof. See also **Course Unit**.

National framework of qualifications

A national framework of qualifications is a single description, at national level or level of an educational system, which is internationally under-

stood. The framework describes all qualifications awarded in the system considered and relates them to each other in a coherent way. One very clear example is that of the Republic of Ireland http://www.nqai.ie/en/ See also **Qualification Descriptors**.

Optional course unit

A course unit or module that may be chosen as part of a study programme but is not compulsory for all students. Some systems distinguish between *electives* (i.e. course units chosen from a pre-defined list) and *completely free* optional course units.

Qualification

Any degree, diploma or other certificate issued by a competent authority attesting the successful completion of a recognized programme of study.

Qualification descriptors

Generic statements of the outcomes of study for a qualification. They provide clear points of reference that describe the main outcomes of a qualification, as defined in the National Frameworks, and make clear the nature of change between levels.

Reference points

Non-prescriptive indicators that permit the comparison of degree programmes in particular at subject area level.

Resit examination (Exam)

Students who have not been able to take or who have not passed an examination or assessment on the first date scheduled may be offered the opportunity to take a resit examination or assessment at a later date. Where a resit examination is offered, the candidate is deemed to have passed or failed the examination *after* the results of the resit are known.

Second cycle degree

This is a higher education qualification awarded after the successful completion of second cycle studies that may involve some research work. It is

often referred to as a Master's degree. A student normally takes it after completion of a first degree.

Student workload

The time (expressed in hours) that it is expected that an average learner (at a particular cycle/level) will need to spend to achieve specified learning outcomes. This time includes all the learning activities in which the student is required to carry out (e.g. lectures, seminars, practical work, private study, professional visits, examinations).

Study programme

An approved set of modules or course units recognized for the award of a specific degree, which should be defined through the set of learning outcomes, expressed in terms of competences, to be achieved in order to obtain the specified credits.

Supervisor

Member of academic staff of the University who monitors the progress of a Doctoral candidate, provides advice and guidance, and may be involved in assessing the Thesis. See also **Thesis**.

Teaching & learning methods

A wide range of teaching techniques are used in universities. The set of teaching techniques strongly depends on the instructional form of education (face to face education, education by correspondence or distance education). The Tuning consultation revealed the following list (which is far from exhaustive):

- Lectures
- Seminar (small group teaching)
- Tutorials
- Research seminar
- Exercise classes or courses
- Workshops (classroom based practical classes)

- Problem-solving classes
- Laboratory teaching
- Demonstration classes
- Placement (internship/traineeship)
- Work based practice
- Fieldwork
- Distance learning (which may be paper based or ICT based)
- e-learning (which maybe entirely on-line or 'blended' using other techniques and learning environments)

Such lists are indicative only, and are really a list of categories of teaching activity, since how each is undertaken may vary widely not only between academics but within the everyday practice of any one academic, depending on the focus of the teaching and the intended learning outcomes for the students.

As with teaching, a wide range of learning activities are used in universities. The following (inevitably partial) list of commonly used learning activities gives some idea of the richness that is possible teaching and learning.

- Attending lectures, seminars and tutorials, laboratory sessions
- Participating in problem solving classes
- Note-taking
- Conducting searches for relevant materials in libraries and on-line
- Surveying literature
- Reading and studying texts or other material
- Summarizing
- Conducting increasingly complex research/independent projects or group projects
- Practising technical, mathematical or laboratory skills
- Practising professional skills (e.g. in Nursing, Medicine, Teaching)

- Researching and writing papers, reports, dissertations of increasing difficulty (in terms of size and complexity of the material)
- Working with other students to co-produce a report/design/answer to a problem
- Preparing and making oral presentations, either in groups or individually
- Making constructive criticism of the work and others, and using the criticism of others productively
- Chairing and participating usefully in meetings (of seminar groups, for example)
- Leading or being collaborative members of teams

Thesis

A formally presented written report, based on independent research/enquiry/project work, which is required for the award of a degree (generally a first or a second degree or a doctorate). It may also be called a dissertation.

Tuning project

Tuning Educational Structures in Europe is a university driven project which aims to offer a universal approach to implement the Bologna Process at higher education institutional and subject area level. The Tuning approach contains a methodology to (re-)design, develop, implement and evaluate study programmes for each of the Bologna cycles. Furthermore, Tuning serves as a platform to develop reference points which are based on learning outcomes expressed in terms of competences. Tuning distinguishes generic and subject specific competences. The project is developing cycle (level) descriptors for a growing number of subject areas. Launched in 2000 and supported, financially and morally, by the European Commission, it covers now the vast majority of the Bologna signatory states, including the Ukraine and since 2006 the Russian Federal Republic. A comparable project has been set up in 2003 for now 19 countries in Central- and South-America: Tuning América Latina. It is financially supported by the European Commission in the framework of the Alfa-project.

Contact us

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