APPROACHES TO TEACHING, LEARNING AND ASSESSMENT IN COMPETENCE BASED DEGREE PROGRAMMES

0. 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.

1. 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 became 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.

2. 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.

3. 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[1] are now emerging, which say, for example,

'Student assessment procedures are expected to:

[1] 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

- 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.

4. 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.

5. 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 often 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 perform 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[2], 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 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

[2] 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.

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.

6. 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'[3] 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[4]. 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 ascertaining 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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[4] The total number of countries that was represented in Tuning II was 27. The total number of countries involved in the competences consultation was 25. This is because the European Studies group will do the consultation as part of Tuning III.