Assessing Students Knowledge for the Improvement of the Learning Process. A case study in Catalan Universities

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Abstract

In the last two years AIDA group has been elaborating a case study on good assessment practices in the students' learning process within the university scope. Six professors of the most important Catalan public universities have been selected from different contexts and subjects. This project tackles the issue of students' educational knowledge assessment in the ECTS context. The main aim of our project is to analyze the assessment practices that have been being carried out up to now, regarding those considered as excellent to understand their strengths as well as to disseminate the elements that can lead to improvement of our assessment activity.

The study subscribes to the interpretative paradigm. We have chosen a multiple case study, and analyzed six cases of educational actors considered as promoters of excellence level of assessment practices.

The first result of our research concerns the identification of 20 fundamental characteristics of a good assessment practice. Another aspect of the research regards the description of the analyzed cases. There has been gathered some interesting data on the proposed characteristics (with interviews, student's questionnaires and documental analysis). This aspect of the research is based on the transversal analysis of the data collected from the sources. Comprehensive analyses can be conducted for each tool used to examine their corresponding level of similarity.

Objectives

AIDA group (an interuniversity research group which has an investigation financed by the Spanish Ministry of Education and Culture: reference **SEJ2007-65786/EDUC)** was created to make research on aspects regarding students assessment in Universities in the European Higher Education Area.

This project tackles the students' educational knowledge assessment in the ECTS context and the main aim is to analyze the assessment practices that have been being carried out up to now, regarding those considered as excellent to understand their strengths as well as to disseminate the elements that can lead to improvement of our assessment activity.

Therefore, the objectives of our project are:

1. To define and characterize an excellent assessment practice.
2. To analyze, compare and summarize views and opinions of teachers and students from public and private universities regarding the proposed assessment process, as well as its transparency, flexibility, accuracy and convenience to measure competencies.

3. To understand teachers' conceptions and didactic planning processes that lead to assessment activities put into practice; to understand the most relevant variables which explain what a quality assessment practice means.
4. To spread those processes of education-learning whose assessment has been considered more successful in terms of students' and teachers' satisfaction and learning processes.

The developed project last two years and its results have constituted the base for the beginning of a new phase in which we focus our work on the evaluation of competences, in the frame of the ECTS.

Perspective or theoretical framework

The field of knowledge of educational assessment is relatively recent. In the last decades it has evolved considerably, generating studies on evaluation of institutions, programs and professors.

At international level, there is a variety of literature starting with the classic works of Scriven (1967, 1973, 1981), continuing with Stufflebeam and Shinkfield syntheses (1987), the proposal of democratic evaluation of MacDonald (1988) and the more known standards of Joint Committee on Standards for Educational Evaluation (1981), Boud (1991) and Dressel (1961). The evolution in the field of programs' evaluation has been conspicuous, from Tyler's model objectives-driven / oriented to Stake's model of responsive evaluation, Parlett and Hamilton's illuminative model or that of Eisner's artistically criticism.

Institutional and teaching staff assessment has also been subject to countless developments. Nevertheless, student assessment, especially within the university area, has been little developed up to the already classical studies of psychometrics. In spite of this, in the two last decades, there have been conducted some interesting studies on the subject. Of notorious importance are the contributions of Allal, Cardinet and Perrenoud (1979), Lafourcade (1985), Heywood (1989) or Joint Committee (1988). It is also worth mentioning the international investigations made on the subject by Bangert, 1995; Boud, 1988; Breland, 1983; Cohen-Schotanus, 1999; Cruse, 1987; Ebel and Frisbie, 1986; Gibbs, 1989; Millman and Greene, 1989; Rolfe and McPherson, 1995 or Topping, 1998; Boud and Falchikov (2006). All these classic works constitute the basis for the issue we approached.

From the review of the classic literature we elaborated some of the main topics of our work, which have been reinforced with the works on educational evaluation that have been elaborated in the last decade. These are the following:

- The assessment is situated in the didactic "crossroads". This means that it is an effect but simultaneously **it is a reason** of the learning process. In Miller's words, the evaluation orientates the curriculum and can generate, therefore, a real change in the learning processes. Allen (2000) or Brown and Glassner (2003) have helped us to understand that the assessment cannot be limited to the qualification (but this is a subset of the evaluation); it cannot be centred on the recollection and the repetition of information (but there must be evaluated cognitive skills of top order) and that it cannot be limited to tests of " pencil and paper ", but there are needed complex and varied instruments.

- The assessment must constitute an opportunity of learning and to be used, not for guessing or selecting who possesses certain competences, but for promoting these competences in all the students. This **formative dimension** formulated by Scriven has been approached widely in the last years by Hall (2003) and Kaftan (2006).
- The competence's assessment forces us to use **diversity of instruments and to imply different agents**. We have to take samples of the executions of the pupils and use the observation as strategy of withdrawal of systematic information. This one can be accompanied of closed records (check-list, scales, rubrics) or of opened registrations, and it can be done on the part of the professor, on the part of the colleagues or on the part of the own student (or for all of them, in a 360º model of evaluation). In any case it must provide information about the progression in the development of the competence and suggest ways for improvement. In this respect, authors like McDonald et al (2000), Stepehn and Smith (2003), Scallon (2004), Gerard (2005), Laurier (2005) or De Ketele (2006) have carried out an analysis of the meaning of the designs for competences and of what implies the evaluation for competences.
- The evaluation has to be **coherent** with the rest of the elements of the formative design and integrated in it. For that reason, the most coherent methodological experiences with the designs for competences, since they are the simulations, the projects, the PBL, etc., are associated with assessment activities very relevant for the evaluation for competences. The works of Segers (2001) or from Gijbels (2005) have turned out to be very illustrative in this point.
- The evaluation has to make the students more conscious of their level of competences, the way they solve the tasks, what strong points they must promote and what weak points must correct to face future situations of learning. This process of self-regulation, which Boedaerts and Zeidner (2000) have written about, is going to be essential to continue Life Long Learning and, constitutes, itself, a key competence.

Methods, techniques or means of inquiry

The study subscribes to the qualitative/interpretative paradigm (Haberman, Maxwell, Wittrock). The aim is to understand what a good assessment practice consists of, taking into account its complexity and multidimensionality. The intention is neither to offer general hypotheses nor to establish patterns of behaviour. Anyway, it is up to the reader to make inferences. Hence, the methodology is based on the logics of the qualitative paradigm (Shawn, Guba, Lincoln).

First, the team analysed the literature in the field of study in order to frame the theoretical approach and to formulate a point of view on educational evaluation, in general, and students' assessment and competence evaluation in particular.

By means of debate group sessions, the team conceptualized evaluation as a systematic process of gathering, analysis and interpretation of data in view of making judgements and take decisions. Secondly, we chose a multiple case study, analyzing six cases of educational actors viewed as promoters of excellence level of assessment practices.

Our cases are represented by a variety of universities and specializations:

	University of Barcelona	Autonomous University of Barcelona	Polytechnic University of Catalonia	Open University of Catalonia	University Rovira i Virgili (Tarragona)	University Pompeu Fabra
Social Sciences				X (Law)		
Technological Sciences	X (Pharmacy)		X (Engineering)			X (Micro-Biology)
Heath Sciences					X (Psychology)	
Sciences of Education		X (School Teachers)				

Table1: Selected cases

The 6 analysed study cases have been selected under the following criteria:

- The adjustment to the topics that the investigation group considers as determinant of a good evaluation practice.
- The best teacher profile, considering the students satisfaction, leadership, membership of an innovation group and the number and quality of publications about teaching/learning process.
- Different specialities selection in order to offer a good representatively of the discipline fields.
- Use of innovating teaching/learning methodology like problem based learning, project based learning, autonomous work or the assessment techniques in the cooperation learning process.
- To select different types of formative experiences face to face or e-learning.
- To explore competences curriculum designs.

Data sources or evidence

The mechanisms of information collection chosen allow us to understand the evaluation processes and to find out the quality of the interviews with professors, questionnaires and documentary analysis.

Research Technique	Information sources	Information
Interviews with teachers	Teachers	Description of evaluation system Explanation of the reasons for adopting and implementing the present evaluation methodology. Understanding the multidimensionality of the assessment process.
Questionnaires for students	Students	Opinions and valorisations on the characteristics of the evaluation system. Students' satisfaction with their evaluation system.
Documentary analysis	Curricular programme	Correspondence between programme components (objectives, contents, methodology, evaluation).
	Assessment system design (exams, activities, practice handbook, portfolios, etc.)	Correspondence between assessment tests and objectives, contents and methodology.
	Other	E.g. Teacher's feed-back and contribution to students' continuous assessment.

Table 2: Sources of information

The interview is semi structured according to the characteristics of a good assessment practice and developed processes which ensures its quality. The interviews were designed and processed by the same person, in order to assure consistency and coherence. The data have been sorted and analyzed by means of Atlas Ti.

The students' questionnaire is made up of 25 items structured in 2 parts. The first part consists of 20 items regarding approximately 20 characteristics of a good assessment practice. The questionnaire is anonymous and it was administrated by our researcher, except for the case of the Open University of Catalonia, where we applied the questionnaires through the virtual platform. The second part of the questionnaire consists of 5 items and its main objective is to compare and improve the data in the first part. The questionnaires have been statistically analyzed.

	University of Barcelona	Autonomous University of Barcelona	Polytechnic University of Catalonia	Open University of Catalonia	University Rovira Virgili	University Pompeu Fabra
Number of questionnaires	53	37	17	20	32	51

Table 3: Number of questionnaires gathered in every case

The documentary analysis is the tool used for all the documents. It brings new data concerning different types of assessment tools, feed-back, proposed contents, all intended to support the formative aspect.

By data triangulation, we consider having achieved a more in-depth understanding of assessment practices used by teachers and more detailed explanation of the measure in which these practices correspond to the characteristics of a quality assessment, established in the beginning of our research.

Results and/or conclusions/points of view

The first contribution of our research concerns the identification of 20 fundamental characteristics of a good assessment practice. Thus, this must be:

1.	Coherent	6.	Explicit	11.	Viable	16.	Precise
2.	Proportionate	7.	Flexible	12.	Meta-evaluative	17.	Individualized
3.	Accreditive	8.	Different			18.	Continuous
4.	Formative	9.	Correct	13.	Motivating	19.	Ethical
5.	Diagnostically	10.	Contextualized	14.	Friendly	20.	Collective
				15.	Fast		

These 20 characteristics presenting similarities with those proposed by the Assessment Reform Group (2002) insist on the fact that:

- Evaluation is part of the teaching and learning process
- Implies sharing of learning objectives with the students
- Assumes that students know and understand evaluation criteria
- Incorporates students' self –evaluation
- Promotes information to students so they know which the next step in their formation/education should be taken
- Implies that students know and understand evaluation criteria
- Relies on the confidence that every student can progress
- Requests commitment of both teacher and student for check and decide over the evaluation data

The analysis of the questionnaires, the interview and the documents has allowed elaborating an individualized report for each of the studied cases. In the following table there are rescued 3 characteristics that have emerged, from the triangulation, as more present in every case and those other 3 characteristics of which the case, in spite of being considered to be a good practice, suffers. It leads us to emphasizing the character contextual of every practice of evaluation and to checking our list of characteristics.

	University of Barcelona (UB)	Autonomous University of Barcelona (UAB)	Polytechnic University of Catalonia (UPC)	Open University of Catalunya (UOC)	University Rovira i Virgili (Tarragona) (URV)	University Pompeu Fabra (UPF)
Coherent	☺	☺	☺	☺	☺	☺
Proportionated						
Accreditive	☺					
Formative		☺	☺	☺	☺	
Diagnostical	☹	☹	☹		☹	☹
Explicite		☹				☺
Flexible			☹	☹	☹	☹
Different						
Correct						
Contextualized		☺				
Viable						
Meta-evaluative	☺					☺
Motivating						
Friendly						
Fast		☹	☺			
Precise				☺		
Individualized	☹		☹	☹		
Continuous	☹				☺	
Ethical						
Collective				☹		

Table 4: Emerging and missing characteristics

Global results:

According to our responses, a good evaluation has to be: ***formative*** and ***coherent***. First, all the teachers and all the students, have indicated that they value a coherent evaluation with the aims of learning, with the contents and with the used methodologies. This ***coherence*** is valued as something especially desirable by the interviewed teachers and appears clearly in the documentary analysis. It emerges the idea that the coherence in the design is a desirable aspect for the evaluation be formative. There is a correlation between coherence and the formative aspect of the assessment.

On the contrary, there are other aspects that do not emerge within the assessment practices but would be desirable to appear. These aspects are: ***diagnostic, flexible and individualized***. That is to say, the evaluation on the beginning of the course or a didactic unit in order to explore the previous knowledge and the expectations of every student is not sufficiently developed. All of the students, teachers and documents have confirmed this idea. We consider this point an important aspect to be improved in the future, especially in the competencies assessment process. The evaluation practices do not appear as flexible (there is no negotiation, there are no itineraries so that the student might choose among several options), neither individualized (so that attends diversity or adjust to students needs). There is a trend to propose a similar system of evaluation for all the students, maybe in order to make sure that the evaluation is ***correct***. Obviously this point of view does not match with a constructivist paradigm of education (in which each one constructs the knowledge actively by him starting from the previous knowledge or what he/she considers significant and functional). The rest of characteristics (up to the 20 outlined initially) are more evident in some cases than others, and with different weights. Undoubtedly, we will need future studies to explore each of them more in depth.

Educational or scientific importance of the study

The research has triggered scientific and technical contributions regarding the improvement of the quality of the educational process in universities, mainly the assessment of the learning process. The main purpose of the study is to make practical proposals that may be considered relevant. Beyond the use of various tools, an appropriate evaluation design may bring near the formative results to the employers needs. The research is considered of great importance due to the following issues:

Firstly, the processes of certification and accreditation. The process of certification of different units (external evaluation processes for those who, deliberately, work out a set of instructions previously established), and, moreover, curricular accreditation. It is a fact that additional viable information on students' performance will be needed. In this sense, assessment of learning process will be fundamental and research may be relevant as to the improvement of this process. Secondly, being an area of little research and, in the context of the creation of a European Higher Education Area, the research proves itself appropriate and the academic world may benefit from its outcomes.

Thirdly, by improving assessment we may also improve educational performance. Assessment should not be considered irrespective of the other elements of curricular programmes. As a consequence, innovations in the field of assessment may bring about reconsideration of education and teaching-learning process as well as the use of a new methodology.

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