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Changing education – QA and the shift from teaching to learning

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Member of IST Quality Management Board, she collaborated in several international projects: SUMUP – Strategic University Management: PEOPLE-Promoting Educational Organization through PEOPLE (EU-Tempus) Unfolding Practices (EU-LLP); ATTRACT – Enhance the Attractiveness of Studies in Science and Technology (EU-LLP); Self-assessment exercise and evaluation of the EFQM model as applied to IST (CESAER); Quality Assurance: Public Policies and Management in HEI (EU-ALFA).

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He is a Civil Engineering Student at Instituto Superior Técnico and Student Representative at the executive board of the IST Pedagogical Council. He participates in regular decision making processes as a full member of the Pedagogical Council, including problem solving regarding students and teachers interaction & improvement of Student Services.

Member of IST Quality Management Board**.**

Proposal

Title: From teaching assessment to formative learning assessment.

Abstract (150 words max):

Considering some of the Bologna principles, this paper aims to show the main changes and consequences of the performance assessment system of IST teaching body (QUC, Course Unit Quality), in particular taking into account two key changes of the teaching paradigm (Bologna): placing the student at the heart of the learning process and building up curricula based on competence profiles.

Relying on a summative approach, the process has undergone deep changes that helped the formative character of the system, by ensuring that a joint systematic reflection of all stakeholders in the teaching and learning process was made, and the corrective actions in accordance with the outcomes.

Text of paper (3000 words max):

1. INTRODUCTION

The need to adapt in response to the Bologna process and to the international reality has brought in deep changes to higher education, which led to a review and assessment of the teaching and learning process itself, with a broader conception of teaching. Student-centered, the teaching and learning process considers Students as "critical participants and creative producers of knowledge (to know, to know how to do, to learn, to be), who are actively involved in their own learning process".

In this regard, it was essential to review the IST Subject Assessment System, which has been applied systematically to its undergraduate programmes since 1993, and regulated since 1988 by the Pedagogical Council. In addition to the summative function stressed until now and which provided warning indicators for problem situations, the new system aimed to put special emphasis on the formative function, seeking out development opportunities for Teachers, and providing pathways on how to innovate teaching and learning processes with the ultimate purpose of improving the learning quality. On the other hand, it was intended to encourage greater mobilization of the outcomes achieved when defining the action plans, therefore contributing to improve, effectively and continuously, teaching and learning quality at IST.

In light of the foregoing, in 2008 a number of guidelines were proposed with a view to building up a new Quality Assurance System for Teaching and Learning Process in Course Units (QUC). It is part of another more comprehensive system – SIQuIST (IST Quality Management Integrated System) – which is pivotal for the institution's external Assessment and Accreditation processes and its study cycles by stimulating a global and integrated quality culture which links IST strategic objectives to its operating goals. Nevertheless, more than responding to external demands, this subsystem ensures that there is updated information on how IST operates and that this information is disseminated. In addition, it allows for creating feedback mechanisms in order to improve the working and performance conditions of all involved in the educational process.

In this regard, this paper provides the assumptions listed in the SIQUIST Regulations. These assumptions are deemed essential to build up any assessment system, guided the development of the system and are aimed:

- To set the assessment objectives and the assessors' objectives;
- To get stakeholders involved in decisions regarding assessment processes and policies;
- To redress the balance between institutional vs individual needs;
- To disclose information on the assessment in a clear way (criteria, processes and procedures);
- To provide resources for teaching quality promotion and improvement;
- To promote assessment regularly and continuously over time;
- To use and adapt instruments to specific teaching situations;
- To use validated instruments for institutional assessment purposes;

- To keep formative assessment separate from summative assessment.

2. QUC SYSTEM

QUC promotes a half-yearly assessment of all Course Units that are part of the Undergraduate and Master Programmes taught at IST. Through an analysis of their operating conditions, seeks to encourage pedagogical research, innovation in teaching practices and the (self) assessment of the teaching body.

The key objectives are:

- To monitor how each Course Unit operates against the objectives contained in the educational plans of Programmes offered by IST;
- To further refine the Student's teaching and assessment process and his/her involvement in the learning process.

2.1. METHODOLOGY

The assessment of how Courses Units operate involves collecting information on the quality of knowledge that each Teacher passes on and how that is done. It also includes learning quality indicators, which result from the teaching practice and the reinforcement of the Student's own learning skills.

Considering that any assessment instrument will include diversified assessment sources and instruments, which allow for cross-checking different pieces of information, the system goes beyond a mere assessment of the performance of the Teaching body by the Students. It considers other indicators, including Teacher self-assessment.

2.2. INFORMATION SOURCES

In a summative perspective, i.e. the assessment of the Course Unit operating conditions, indicators have been sought which focused specifically on their organization and operation, associated with a number of norms set by IST's Governing Bodies and outcome indicators expressed in quantitative terms.

In a formative viewpoint, i.e. the Teacher's professional development, the purpose was to assess strategies used within each Course Unit– What to teach? How to teach? What tools to use? What strategies are the most efficient in teaching? What strategies are the most efficient in learning? – Whose main indicators would be the learning outcomes?

In this regard, the assessment is based chiefly on contents available on the institution's computer system, namely regarding organization, planning and outcomes achieved in the Course Units, a Student survey, a teaching report completed by students' representatives and a self-assessment report drawn up by the teaching body. Table 1 summarizes main information sources.

Table 1 – Information Sources

DIMENSIONS / EVALUATION PARTICIPANTS	PLANNING ORGANIZATION AND OUTCOMES	TEACHING, EVALUATION AND LEARNING - PERCEPTIONS & STRATEGIES
TEACHERS		Self-assessment Report
ACADEMIC MANAGEMENT	Fénix System (IST Information System)	
STUDENTS		Student Survey + Student Representatives

2.3. PLANNING ORGANIZATION AND OUTCOMES

Available at IST's computer system, the information on the Course Unit organization, planning and outcomes is presented clearly, consistently and uploaded in the system within the deadlines and according to the guidelines set forth for the purpose, namely:

- Objectives and skills;
- Programme and schedule;
- Workload (contact hours, autonomous work) and credits (ECTS);
- Performance and assessment criteria;
- Main and secondary bibliography;
- Teaching body;
- Class summaries (including student attendance);
- Class timetable and enquiry schedules;
- Exam results.

2.3.1. STUDENT PERCEPTIONS OF THE COURSE UNIT

Student perceptions of the UC are collected based on an anonymous survey released at the end of each semester to measure the individual operation of each Couse Unit, while still allowing assessment of the skills acquired by the students. Since the exams are an essential part of almost every UC, the survey is conducted after the evaluation period to all students enrolled.

With the purpose of assessing students' perceptions as to the operation of each UC (attendance and follow through of UC contents, organization of UC regarding objectives and context of scientific field), skills acquired, and performance of the teaching body involved in the teaching and assessment of students enrolled in the UC, the survey encompasses:

- The use of a single questionnaire for all UC with a pedagogical model based on lectures, problems or laboratory classes, organized around 3 blocks of issues - self-assessment of students at UC, perception of students about the process of

teaching and learning and, finally, performance of the teachers lecturing at the UC;

- The use of a specific questionnaire, only for UCs outside of former pedagogical model (e.g. design, portfolio, seminar, dissertation), and other UCs, duly highlighted in the Fénix Information System by Course Coordinator.

This survey ideally allows identification of the main strengths and weaknesses experienced in the educational process, and an understanding of the opinions of the students about the different aspects of the UC functioning.

2.3.2. STUDENTS' REPRESENTATIVE REPORT

Under any academic year, and through the Students' reps, information on Course Unit operation is collected for the year/programme at issue, namely those which performed poorly.

The Students' reps must therefore identify the course units deemed eligible for the respective teaching report and the components for analysis are: workload, organization against the respective objectives and in the context of their specific areas, and the Teaching body performance and students' evaluation, seeking to complement the analysis carried out under the Student survey.

The answers to this form are based on the role of the Students' Representative, who, among other duties, must previously obtain the opinion of the students enrolled in the Course Unit and takes on the responsibility of completing the Student's Report at the end of each semester, for Course Units that have not had a full level of satisfactory performance.

2.3.3. TEACHING REPORT

This document gathers together relevant information on teaching strategies and the most influential factors for the outcomes in each Course Unit at the end of each semester, including delivery of information obtained in the previous tools.

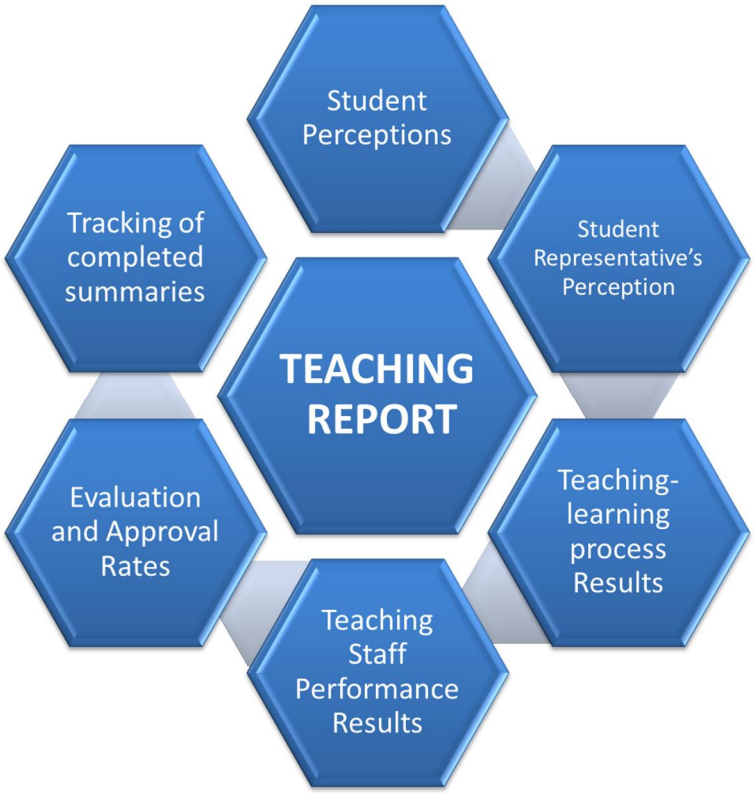

Figure 1: Information presented in the Teaching Report

With the purpose of self-assessing the work carried out by the Teaching staff, this Report contains a number of questions to be answered by all IST teachers. There is also a set of additional questions with strengths and weaknesses and proposals for improvement of course unit operation addressed to all those who hold positions with responsibility.

Based on the new models of teaching and learning, and assuming the guiding and coordinating role of the learning process, the Teaching body is invited to develop capacities for analysis of the learning experience of their Students and the level of skills acquired. This will result in a self-assessment exercise and improvement of the continuous professional development and, therefore, the characterization of initiatives to further refine and improve the teaching and learning process.

Thus, this self-assessment encourages lecturers to consider:

- The operating conditions and the progress of the outcomes achieved;
- The development of technical and scientific skills set out in the course unit objectives, considering the teaching contents and the learning methods used;
- The pedagogical activities developed under the course unit at issue;
- An inventory of good practices likely to be disseminated among the academic community.

2.4. PUBLICATION OF RESULTS

*Feedback **from** the academic community is as important*

*as feedback **to** the academic community*

The Pedagogical Council is responsible for promoting the general dissemination of results to the academic community. By enabling the school to regularly learn of a number of aspects regarding the UC operation at IST, the Pedagogical Council also helps content adjustment and improvement of teaching and learning practices in a sustained way, in addition to motivating the academic community to be more engaged, critical and responsible. On the other hand, the systematic data gathering on the quality of teaching and learning, allows students to get information which helps them to make their subject choices with as much relevant information as possible – for disclosure criteria see Figure 2.

Figure 2 - Levels of dissemination of results

2.4.1. ANALYSIS AND INFORMATION SYSTEMATIZATION

The Coordination of the various programmes produces a biannual report on the results of the respective UC, based on information contained in the various Teaching reports, which include:

- A global review of the operating conditions and the results achieved by the students in the UC;
- Possible corrective measures to be adopted, with the respective timing;
- Identification of any best practices for teaching and learning developed by UC teachers, with a view to systematization and dissemination of the same.

The report of the Programme Coordinator is sometimes very useful for both reflection of the teaching team and with problem solving regarding identified difficulties.

2.4.2. HANDBOOK OF BEST PRACTICES

The Handbook of Good Practice project began in the school year 2008/2009 under the collaboration between the QUC team and the Tutoring Support Office, with coordination of the Pedagogical Council.

Teaching practices developed by teachers at IST identified as excellent by their performance on Course Units 1st and 2nd Cycle, were collected and systematized.

The purpose of collecting and systematizing of teaching practices (some of which were innovative) was to make them accessible to all Higher Education teachers, either through research and documentation of practices or through interviews conducted with teachers ranked as excellent under QUC system. This Handbook of Best Practices Manual was meant to be ongoing and updated over the years, regularly supplemented by the edition of new research and complemented through the identification of interesting links for the dissemination of reference articles in the field of pedagogy in higher education in general and in the area of science and technology in particular, benefiting by that the contributions of the entire academic community.

In 2011, a Study and a supplementary Technical Report were produced, analysing and documenting teaching practices in the IST academic years 2008/09 and 2009/10 – from this study, six teaching profiles were identified (see Figure 3).

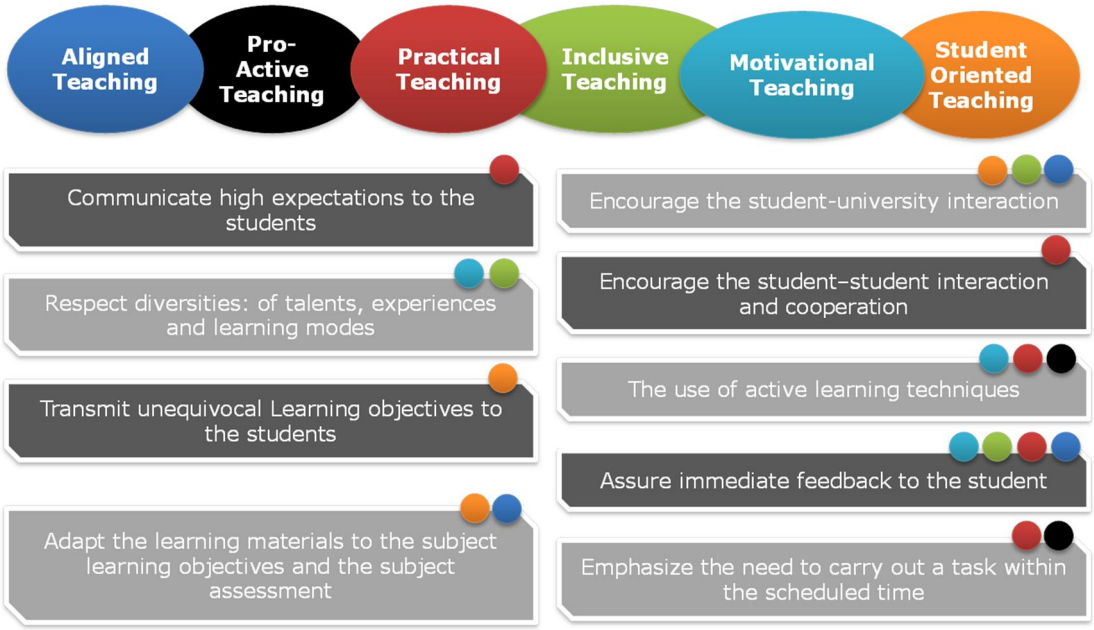

Figure 3 – Teaching Profiles

The same year, the best practices concerning the information contained in the UC homepages were finally concluded and published. In 2012, a first Case Study of a UC - Complex Analysis and Data Structures was concluded and published. It is expected that in coming years new studies will be conducted and disseminated within IST, thus promoting the exchange of experiences and building confidence and team spirit among members of the teaching body. Following this recent enthusiasm and interest of teachers in improving their practices, a large scale program was launched (2013/14 school year), within different Schools of the recent University of Lisbon, were higher education teachers observe and are observed inside the classroom and teaching and learning experiences shared in a semi-formal meeting following the observations. Workshops on such diverse contents as emotional intelligence, conflict management, motivation of students within the classroom and appropriate use of voice and non-verbal behaviour during classes have been running at IST in the last five years. Stressing the importance of improving the quality of the teaching and learning experience in higher education, all this research and hands-on training seems to be boosting diversity and innovation in the

forms of teaching and learning in IST courses, something that is expressed by the growing numbers of Excellent Teachers identified each semester.

2.5. ACTION PLANS

If the assessment procedures are not integrated in a global quality management and improvement system, the outcomes may be reduced to a bureaucratic ritual of data compilation. In this regard, it was critical to define a number of lines of action.

Back to SIQUIST, and recalling the underlying perspective to any quality assurance system –ASSESSING TO EVOLVE, INFORMING TO PLAN – the figure below (4) shows the cycle that underlies the continuous improvement cycle, in particular that of the QUC.

Figure 4 – QUC improvement cycle

2.5.1. PROCEDURES AND CRITERIA IN VIEW OF POOR OUTCOMES

After identifying poor outcomes, procedures have been defined in order to solve the problems found and improve continuously the outcomes, which include publishing, in specific regulations, criteria for identifying the course units with outcomes to be enhanced, as well as the respective improvement plans that include conducting an audit.

Examples of possible procedures following the identification of a UC in need of improvement (not stated in the regulation, but rather reached by consensus within the Pedagogical Council and considering both teacher and student members feedback):

- Analyze the available information, including Teacher reflections in the reports of teaching;

- If appropriate, and / or if the information collected is not sufficient, Teacher (s) concerned are invited to a meeting;
- Clarify the situation, searching for the reasons that might have contributed to poor outcomes;
- Define measures to correct / overcome deficiencies detected that might contribute to solving the problem;
- Inform the Programme Coordinator on the outcome and of the steps taken to remedy the situation and the proposed plan of action, including the respective timing.

This plan of action may include training teachers in areas considered relevant, through group sessions or, if appropriate, a custom tracking using techniques of "coaching", leaving the Programme coordinators to identify areas of educational development for the Teachers.

In this context, and in order to mobilize the results obtained, IST promotes initiatives and provides resources for the implementation of actions to improve the quality of teaching and learning process which should address the areas considered relevant and in accordance with identified needs (eg curriculum development, planning of teaching / learning, methods of evaluation of students, use of information technology, including e-learning, technical communication).

2.5.1.1. AUDIT

There are several situations where the Pedagogical Council indicates a UC to be the object of further analysis (audit):

- If it considers that the evidence provided and / or the measures proposed in the improvement plan of UC are insufficient;
- If the results of the implementation of the improvement plan do not show a positive evolution in the next execution of the UC;
- In the case of unsatisfactory results in the UC, identified by QUC surveys and in accordance to the defined criteria in QUC regulation.

For this analysis, the Pedagogical Council appoints a working group whose membership includes:

- A Teacher and a Student of the Pedagogical Council;
- The Chair of the Coordination Department and/or Programme Coordinator must be available to meet with the group that audits and monitors the UC, appointed by the Pedagogical Council;
- The working group will be required to consult the Coordinator of UC as well as the Delegate of year / course.

This work is not meant to police the teachers or their activities, but to enable the working group to issue an advisory opinion for the Coordination of the Programme, ensuring accuracy and safety in decision making and problem solving – in order to do this, the group as to follow a pre-defined set of procedures and to ensure validation through an array of internal controls as defined by IST.

The sources of information would be essentially those previously identified, but the working group may decide to add others as it deems necessary, and those may include on-site observation of a class of the UC in question.

2.5.2. DISCLOSURE / PROMOTION OF TEACHERS WITH EXCELLENT RESULTS

Finally, as a promoting factor of practice, the Teachers who have exemplary results are publicly recognized by the Governing Bodies of IST, and encouraged to share their learning experiences with the academic community in events promoted specifically for this purpose, under the responsibility of Pedagogical Council. One of the most dignified moments of this recognition is at IST Anniversary Day, where all excellent Teachers are invited to the ceremony and awarded a Diploma of Excellence in Teaching. In the following years a Monetary Award for two distinguished Teachers will probably be attributed in this Ceremony.

3. FINAL NOTES

The contribution of the students through the years in this process was essential. The involvement of students of the Pedagogical Council in reformulating the model and especially in the dissemination and motivation of the student population to participate in the new model strategy was crucial, in particular the use of a communication and dissemination strategy appropriate to this young population, enabling the students to be motivated to participate in the surveys and to be involved in the improvement of the UC and the teaching and learning process.

Student involvement also proved crucial for the establishment of boundaries / targets on the performance indicators of this rating system, as well as clear guidelines for the implementation of any corrective action procedures, not depending on the academic management board elected at the time to implement them.

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Questions for discussion:

- To call on all participants in the teaching-learning process and propose quality improvements that are consistent overtime seems to be an important part of formative learning assessment, but who should be invited to participate? What would the level of commitment be expected from each participant? How can we help participants increase their levels of commitment and accountability for the whole process?
- To set clear, predefined boundaries / targets for assessment, as well as clear procedures for implementation of any corrective actions, seems also to be a crucial part of the formative learning assessment, but how can we ensure these boundaries/targets remain stable overtime, since they're dependent upon educational policies and Management Board priorities that change regularly? How can we also make sure that regulations prevent conflicts of interest between participants, or, at least set clear guidelines to regulate them?