# THE IMPLEMENTATION OF A STUDENT-CENTERED PEDAGOGICAL APPROACH BASED IN INFORMATION AND COMMUNICATION TECHNOLOGY

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## Abstract

The process of teaching/learning is an ever changing reality, requiring a permanent adaptation of teaching methods with a view to continuous improvement and increased levels of student motivation. Moreover, the use of information technologies and communication in this same process is now an essential factor, not only as a mechanism for accessing content, but also as a tool for planning, learning, collaboration, assessment, among other variables. The combination of these two realities has forced teachers to a new approach to the pedagogical issues in higher education, with a greater concern with methodology and mechanisms to enable a constant improvement. The article demonstrates the importance that information technologies have in the definition and implementation of a pedagogical approach really focused on students, with their involvement in active teaching and learning. The pedagogical approach that is presented is based on three fundamental principles: (1) the student is the central element of teaching/learning process; (2) active learning should be permanent; and (3) self-study as a key mechanism of preparedness. This approach is divided into six components: (1) Planning, (2) Information, (3) Teaching, (4) Assessment, (5) Feedback and (6) Monitoring. The advance planning of activities is assumed as a key component, because students can plan their efforts throughout the academic year if, from the beginning and in an easier way, they have access to all information for the operation of Curriculum Units. The assessment has to be distributed continuous assessment, which includes different instruments at different times, to allow the assessment tool to adapt to the type of skill to be acquired, and to minimize dependence on the success of students from only one assessment instrument. The gap between the time of conducting the assessment and dissemination of results, which should be minimal, is seen as a major critical factor, not only by the student perception that the proposed approach works, but primarily as a mechanism of motivating students themselves. Finally, monitoring the whole process is an indispensable component, as it seeks to not only meet the expectations of students at first, but also their levels of satisfaction with the functioning of a unit at the end of the Curriculum in order to understand the differential satisfaction that the methodological approach can bring. This pedagogical approach is linked by Information Technology and Communication, without which it would be impossible to implement, given (1) the constant need of sharing information between teachers and students; (2) the problems of the failure and dropout rates particularly in the Engineering area, where it has been applied, and (3) the new profile of students with an increased appetite and dependence of information technologies and communication. The Moodle platform has been a privileged tool to support the activities of all teaching and learning. The results obtained have been very positive, not only as regards the success achieved by students, but also by the results of student satisfaction, giving good indications of the advantages that this approach, particularly in the motivation of students.

Keywords: Teaching methods, information technologies and communication, active teaching and learning, motivation of students.

## 1 INTRODUCTION

The process of teaching/learning should be looked upon as a constantly changing reality, where it is need to (a) search methodologies and tools adequate to the pre-established objectives, (b) experiment new methodologies and new tools, and (c) adopt an approach of continuous improvement with regard to the application of those same methodologies and instruments. The thoughtful, objective and planned use of methodological approaches to the teaching/learning process, that combine the need to adapt, through innovation and experimentation, the traditional models and instruments thoroughly tested to the new contextual reality, will be crucial, towards a new vision that does not just cut with established practices, but enables a conscious and consistent evolution, in which the fundamental vision is to increase the levels of motivation, interest, commitment and student participation,


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understanding him as a critical factor of success in the acquisition of skills. Although in recent years, in the higher education, have been used more active pedagogical methods that require greater student participation, the “lesson” format of the classroom, still has yet, a dominant role in the teaching/learning process. But, the internet in so providing many of the contents presented in the classroom, enables students to gain access to other sources of information and knowledge. Moreover, “*the new technologies allow and encourage new approaches in the context of education*” [1], and at a higher education level, can translate into *“innovative approaches to student-centered learning and not only in the use of technology by teachers to prepare lessons, find information or send emails”* [2]. As such, active learning, can be defined as any strategy “*that involves student doing things and thinking about the things they are doing”* [3], has *“attracted considerable attention in higher education as a response to how and what students learn”* [4]. Thus, by using strategies *“that promote active learning, the teacher expects the student to develop critical thinking, to engage in the process”* [5] and is responsible for their own learning.

## 2 METHODOLOGY AND OBJECTIVES

The current framework of teaching/learning in higher education is inconsistent with an occasional and casuistical management of the curricular units (UC), and is also inconsistent with the training seen as a whole. The main objective of the present investigation, is to contribute to the creation of mechanisms that allow the transposition to pedagogical practice in higher education institutions of two main guidelines currently in place:

- Student-centered learning – adoption of pedagogical methodologies and assessment mechanisms that enable an increase in the accountability of the student´s own learning, namely, through the creation of moments, that allow the student to decide on the degree of complexity of the work that he intends to undertake and the final result he hopes to achieve, differentiating him in a positive manner and stimulating individual creativity.
- Active learning and autonomous study – development of mechanisms for encouraging active student learning, through practical activities, research, critical analysis of information and previous preparation of activities to be implemented.

For these principles to be implementable in practice, a methodology is proposed with a very particular focus on continuous assessment, defining it as a permanent relationship between teaching, learning, learning outcomes acquisition, assessment and results, in a schedule tending to the weekly and the most diversified possible. To this purpose, pedagogical methodologies and assessment instruments are used to enable at each moment to identify the learning outcomes, through the activities developed by the students, associating them with formal results that have a direct impact in the final assessment in the UC. The present article is included on a study started in 2009, which has three phases. The first phase, sought to define and consolidate the methodology of a student-centered pedagogical approach using ICT as its support, having started its formal applicability in different UC`s. In the second phase, which is currently taking place, the main focus is to measure their impact on student satisfaction. Thus, despite the methodology being applied to different UC`s of Management Sciences, in order to create comparability factors, a case study was chosen based upon a UC that, simultaneously, exist in two degree courses which have characteristics, objectives, skills and distinct programs, but are identical in methodological process, namely, regarding planning and assessment methods. The Management Accounting UC, administered to the degree of IT Engineering that runs in a semester format and is totally based in classroom, whose student profile is that of the General Access to Higher Education. The same UC is administered in the degree for Technology and Industrial Management, in a quarterly b-learning format, in which the student profile is that of active workers with access to Higher Education by the Special Regime (people over 23 years old). The third stage of the study, to occur in the future, will cross check the information collected about the levels of satisfaction of the students, with the academic results verified, in order to assess the impact that have on student motivation, learning outcomes acquired and final results.

To enable the second stage and validate the methodology used, two surveys have been developed and applied: (a) a survey of expectations, in order to measure the expectation of students regarding the UC at the beginning; and (b) a satisfaction survey, with the objective of measuring the level of student satisfaction regarding the same UC, and is therefore applied at the last day of classroom. The use of these two surveys aims to answer 3 investigation questions:

I – Could the satisfaction results in the UC, in academic year N, influence the level of expectations of the same UC in academic year N+1?

Despite being different groups of students in academic year N and in year N+1, it is expected the satisfaction have some influence on the level of their expectations relative to the functioning of a given UC, as there is an informal transmission of information between the students.

II – Could there be a difference between the expectations and the level of satisfaction and will that difference diminish throughout time?

Taking into account the concern to meet the needs of the students and their levels of satisfaction, seeing them as a stakeholder, one of the most important, in Higher Education, it is expected that there will be an improvement, in the current academic year, between the expectation and the level of satisfaction and that throughout different academic years there will be a progressive decrease in the gap between the two, tending to the full satisfaction of the students´ expectations.

III - Could satisfaction evolve positively over different academic years?

From an academic year to next academic year, when seeking to improve each component of the methodology, it is expected that throughout time, the level of satisfaction will improve, until an optimum point is met, from which, the increase of satisfaction is irrelevant. Indications of decline in the level of satisfaction, may require a review of the methodology. To prevent this from happening, it will be necessary to introduce new methodological approaches more suited to the new student profiles.

The surveys were constructed in accordance with 5 dimensions: (A) Global functioning, where the global functioning is questioned, the importance of the UC to the overall degree and the adequacy of ECTS; (B) Learning outcomes acquisition, which questions the acquisition of each of the specific learning outcomes in the UC concerned; (C) Assessment Instruments, which questions each of the assessment instruments used; (D) Operational Functioning, which questions the main dimensions of the methodology used, namely planning, contents, lecturing, feedback and the use of the e-learning platform; and (E) Student Performance, which questions the interest on behalf of the student for the contents, the time devoted to study and the degree of achievement of individual objectives. A scale from 1 to 6 was used (Likert scale), with 1 being the lowest value (total dissatisfaction) and 6 the highest value (total satisfaction).

# 3 METHODOLOGICAL APPROACH TO THE TEACHING/LEARNING PROCESS

## 3.1 Pedagogical Methodology

As referred [6], recent advances in internet and web technologies, have redefined boundaries as well as pedagogical interactions between teachers and students. The learning activity may occur at the same time in different places (for ex: using video conference), in different places at the same time (in the classroom), or at different times in different places (by internet). "*With the advent of ICT, at nearly all levels of education (…) the potential of ICT has been used to make the transition to a new form of pedagogy*"[7]. *"The students who use ICT study in an open learning environment becoming themselves responsible for their own learning"* [8].

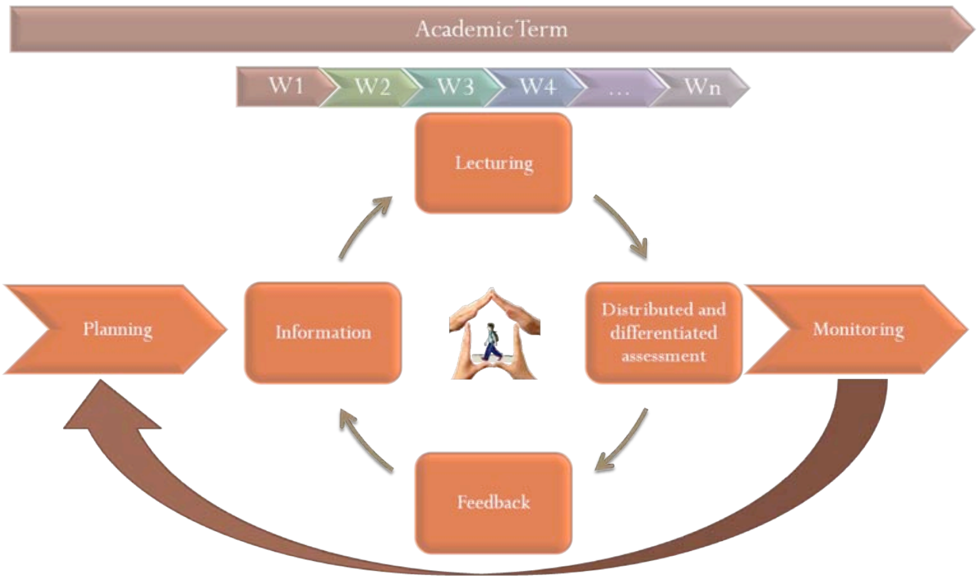
In the last few years, the use of powerful mobile phones (true computers), the high rate of internet users as well as the high volumes of SMS that youngsters exchange per day, has led to virtual reality being used in education and in training. Therefore according to Eurostat [9], on average in the EU, 39% of individuals used the internet for educational or training activities, as opposed to a value of 30% in 2008. Moreover, according to the same source, in 2008, 28% of individuals in Portugal used the internet for training and education and in 2010 the same indicator increased to 42%. The country where this indicator has the highest value is Iceland with about 75% of people using the internet for activities of education and training, Bulgaria with 13% is the country in which people use the internet the least for activities of education and training.

As such, the methodology developed (Figure 1) for the teaching /learning process in Higher Education, aims to be a systematic approach to the UC´s, and is based on the current context of evolution of the web and the ICT, and is therefore supported by a distance learning platform. The web platform used is Moodle, which is an open source Course Management System (CMS), also known as a learning Management System (LMS) on a Virtual Learning (VLE). The focus of the Moodle project is always on providing educators with the best tools to manage and promote learning [10].

The methodology is structured in a dual cycle:

- The external cycle, called the cycle of continuous improvement. Comprised of three phases, it begins with the UC planning; it has as an intermediate phase, the internal cycle, and concludes with the monitoring phase. The first cycle should be associated to a schedule identical to the duration of the academic year (although the new planning cycle will only occur in the following academic year).
- An internal cycle, is designated as cycle of process completion. Comprised of four phases, it begins by making available the information to the student, goes through lecturing, followed by assessment and concludes with the feedback of that same assessment. This second cycle, should be associated to a teaching weeks (W1, W2, W3, W4…Wn).

Fig. 1 – Methodology of the Teaching/ Learning process




This systematic approach should be based on the following concerns:

- Students must have access to all the information that permits their active learning and autonomous study;
- All enrolled students must carry out a continuous assessment, as it was felt that this was the most appropriate way to gain skills;
- The continuous assessment should contain differentiating elements between students, to provide the student with enough room for decision making;
- The students that conclude continuous assessment must do so successfully,
- Success must represent the acquisition of skills in the UC.

## 3.2 Description of the Methodology Phases

### *3.2.1 Planning*

The planning of the UC assumes a key role for the successful implementation of the methodology. At this stage, that all the situations must be identified and described, that may be predicted for the following five stages. Thus, it is extremely important to adopt a formal planning stage that follows these phases: (a) Information; (b) Formulation of alternatives; (c) Evaluation of alternatives; and (d) Decision [11], so that, from the first day of classes the students have access to all the information and it is possible to put in place the internal cycle of process completion of teaching/learning.

At this stage, it will be necessary to pay particular attention to the following situations:

- Careful coordination between the different types of classes (Theoretical/Practical, Practical and Laboratory Practice); between groups, taking into account teaching pauses; between teaching staff, not only as regards contents taught, but also in the coordination of those contents with the different types of classes, when lectured by different teaching staff;

- Early availability of activities, of their respective supports and theoretical subjects;
- Do formal moments of evaluation, after all learning activities have been undertaken,
- Existence of a conducting wire and logical sequential learning.

As such, the plan must contain (a) the learning objectives and contents to be lectured/developed in each class type; (b) a detailed schedule of classes, with the respective contents for each of the groups; (c) the resulting weekly activities to be developed by the students; (d) the methodology and the detailed evaluation criteria (including evaluation dates); and (e) periods of feedback of results to students.

### *3.2.2 Availability of Information*

The availability of information, besides being the first phase of the internal cycle of the proposed methodology, is its sustainability basis. Communication teacher↔student is assumed to be fundamental, not only as a mechanism to motivate students through greater awareness of monitoring by the teacher, but above all, for the constant need of sharing information regarding all weekly activities in accordance with the planning. The use of a platform for distance education, assumes special relevance, because apart from being the ideal instrument for the development of distance learning activities, it allows a regular communication between the teachers and the students, in a more appropriate environment to the actual characteristics of the students.

### *3.2.3 Lecturing*

Auster and Wylie [12], *"in their recent study, point out that active learning emphasizes the application of theory and concept by involving students in the learning process"*. Some of the several active learning methods, included problem-solving exercises, simulations, case studies, informal small groups and other activities [4]. In the classroom, active learning is promoted. Therefore, expositive classes assume a more interactive character with the students, not only in question asking, but fundamentally, due to better information and preparation on behalf of the students, as a result of the previous phase and the orientation of these same issues to solve real problems, many of them resulting from project work that runs parallel to the lecturing in the laboratory practice class).

### *3.2.4 Distributed and differentiated assessment*

One key aspect of this methodology has to do with the demand that the learning moments are simultaneous to assessment moments, namely that the learning process is included in the evaluation method, in order to allow a more assertive evaluation of the skills. Although there are different understandings about what skills are, here we have adopted a concept that skills are knowledge translated into the ability to effectively use several prior knowledge, select and integrate them adequately before a given situation (or problem, or question, or cognitive object,…) [13].

In any given assessment process there are two questions that typically arise *What is evaluated? Why do we evaluate?* In the scope of the first question, it is understood that assessment is an organized set of procedures aimed at regulating the monitoring of any desired learning, and that incorporate the checking of its achievement [13]. The second question is linked to the functions of assessment. In the context of this work, particular relevance is assumed by the functions: of regulation (of the learning processes) – understanding the student, finding out the origin of the difficulties, assess the degree of attainment of educational objectives, and of the certification (learning result) - verify that objectives are achieved, attest this result socially [14].

To address these issues, the next stage deals with the assessment model. *Which is the most adequate model?* According to the above principles, it was considered that assessment must be continuous/distributed with student-centered tasks. Even in so called continuous assessment, it would be more appropriate to designate them as distributed assessment, because the assessment marks a stoppage period [14], in the process of pedagogical action. In this sense, it is sought that the assessment methodology is spread over weeks, and that it includes different instruments and several resources that reflect multiple perspectives.

First, not all learning outcomes may be evaluated the same way, the key being the adequacy between the assessment instrument and the type of learning outcomes to be evaluated. Second, because diversification reduces the dependence of success of a single assessment instrument, a situation that removes the capacity of the student to deepen the valences in which he feels more competent. Finally, because this methodology promotes the involvement through student-centered activities [15].

Considering that, assessment in grade-driven systems is problematic [15], in the different UC, it is sought to adapt the assessment tools available on the basis of the following characteristics: group size, existence of a laboratory part, distance education under b-learning and types of learning outcomes. Although, in Tables 1 and 2, some of the assessment tools are presented. These should not be regarded as definitive, because they will be judged in terms of the objectives that should determine, which tools to use and how to use them.

Table 1 – Instruments of presential evaluation

| Evaluation instrument | Objective |
|---|---|
| **Mini-test** | Provide moments of assessment with less concentration of subject matter and nearer to the respective moments of learning. |
| **Project** | Promote the practical application of theoretical knowledge. |
| **Individual assessment** | Allow positive differentiation of the work developed by each student. |
| **Oral presentations** | Develop the capacity of synthesis and communication. |
| **Differentiated exames** | Evaluate non acquired learning outcomes attained during the school year. |

Table 2 – Instruments of distance assessment

| | |
|---|---|
| **Group presentations and theme discussion chats** | Study and debate of topics not addressed in the presential classes. |
| **Group work chat discussion** | Debate ideas in a guided form, the teacher assuming the role of a facilitator. |
| **Questions regarding subject matter implementation.** | Self-assessment of the domain of theoretical concepts and the capacity to apply them in simulated practice situations. |
| **Discussion forums** | Evaluate the control of the subject matter on behalf of the students. |
| **Selftesting** | Encourage self study and self assessment. |
| **Peer-assessment** | Participate actively in the process of evaluation and opportunity to learn during the same [16]. |

### *3.2.5 Feedback*

Feedback is an essential part of any learning process carried out, it should be frequent and progressive [17], as it is the only form for a student to find out their performance and to monitor strategies [18]; [19]). One of the critical factors in the assessment process, concerns the gap between the moment of holding the assessment and the moment of publishing the results, because there is a greater awareness on behalf of the student of the work developed in the activities, if the result of the same is made aware to him in the shortest time possible. On the other hand, this minimization of time between assessment and knowledge of results, enables the student to monitor what is already known, what needs to be known and how to find what is needed (Moore, 1995) [19] and as such, introduce corrective measures as quickly as possible in their own learning process.

### *3.2.6 Monitoring the process of Teaching /Learning*

Finally, monitoring of the process appears as a fundamental link to ensuring continuous improvement, making the connection between the internal cycle of achievement and the external cycle of improvement. That monitoring should assume three levels: (a) at the overall level of UC (allows comparability between different UC; (b) at a specific level (enables assessment of specific methodologies and the instruments used, as well as their suitability to the learning outcomes to be acquired in a given UC; and (c) at a previous level – to compare the initial expectations of the students, versus satisfaction levels at the end of the process. The monitoring result should be one of the fundamental inputs in the planning stages of the learning/ teaching process of a UC.

## 3.3 The importance of ICT

As referred [20], citing Laurillard: never before has there been such a clear link between the needs and requirements of education, and the capability of technology to meet them. Also according to Poce [20] and citing Laurillard: the learning cycle can be summarized as goal- action-feedback –reflection-adaption-feedback-reflection as a reference point from which to start to determine the adequate use of technology, which properly adopted is able to respond to the needs we are facing. Despite the diverse and extensive capabilities of digital technologies and for each stage of the learning path it is possible to find useful combinations of technology, options that could satisfy every specific need. In this sense, the combination of different technologies may be understood as using the Internet in conjunction with more traditional methods in the classroom. The question is, "be blended" — how to combine the internet education with the traditional one [21] resulting from this link of traditional methods with the web, in clear added value for learning. Teaching using both forms results in an activity centred teaching, that on the one hand provides students with the physical space in the classroom, where they meet the teachers, colleagues, and in the case of Engineering "experience" subjects either in the laboratory attendance, or either in the development of projects in a real context.

In this b-learning context, internet services arise in connection with the presential class, Moodle as part of the learning environment and as a vehicle for interaction with colleagues and teachers. This form of education, allows a greater proximity between all stakeholders, it brings together a teaching process and student learning enabling greater success and student satisfaction. This new process of teaching-learning changes the teaching paradigm: the teacher takes on the role of mediator between knowledge, the students and technology. Higher Education can offer modules that are more geared to the needs of each different type of student, with the connection to the internet allows a diagnosis and the establishment of a way in accordance with the paths demanded of students and their aspirations.

# 4 RESULTS ANALYSIS

The results should be viewed as very preliminary, given their limitations, not only because it concerns a single UC, but also as regards the number of school years of data collection, only two (2009/2010 and 2010/2011). Note also, that in the first year for operational reasons it was not possible to apply the survey of expectations. Despite all this, the data suggests interesting results, which are summarized in tables 3, 4 and 5, according to three research questions initially posed.

Table 3 – Relationship between Satisfaction of year n-1 and the Expectations of year n

Degree course in IT Engineering (ITE)

| Dimension | Satisfaction 2009/2010 | Expectations 2010/2011 | Variance |
|---|---|---|---|
| A. Global Functioning | 4,85 | 4,71 | -0,14 |
| B. Learning outcomes Acquisition | 4,66 | 4,65 | -0,01 |
| C. Assessment Tools | 5,17 | 4,75 | -0,42 |
| D. Operational Functioning | 5,19 | 5,41 | 0,22 |
| E. Student Performance | 4,84 | 4,71 | -0,13 |
| Total Average | 4,93 | 4,84 | -0,09 |

Degree Course in Industrial Management and Technology (IMT)

| Dimension | Satisfaction 2009/2010 | Expectations 2010/2011 | Variance |
|---|---|---|---|
| A. Global Functioning | 5,50 | 4,74 | -0,76 |
| B. Learning outcomes Acquisition | 5,22 | 5,06 | -0,16 |
| C. Assessment Tools | 5,49 | 4,71 | -0,78 |
| D. Operational Functioning | 5,14 | 4,98 | -0,15 |
| E. Student Performance | 4,81 | 4,99 | 0,18 |
| Total Average | 5,29 | 4,89 | -0,40 |

About the first question, the empirical evidence shows that behaviors are the same in both degrees, with no apparent influence between the satisfactions of an academic year from the expectations of the next academic year. However, in dimension D, the one that specifically studies the methodology, that influence maybe exists, but in only one of the courses.

Table 4 – Relationship between Expectations and Satisfaction in year n

Degree course in IT Engineering (ITE)

| Dimension | Expectations 2010/2011 | Satisfaction 2010/2011 | Variance |
|---|---|---|---|
| A. Global Functioning | 4,71 | 5,03 | 0,33 |
| B. Learning outcomes Acquisition | 4,65 | 4,97 | 0,32 |
| C. Assessment Tools | 4,75 | 4,97 | 0,22 |
| D. Operational Functioning | 5,41 | 5,46 | 0,04 |
| E. Student Performance | 4,71 | 4,69 | -0,02 |
| Total Average | 4,84 | 5,05 | 0,21 |

Degree Course in Industrial Management and Technology (IMT)

| Dimension | Expectations 2010/2011 | Satisfaction 2010/2011 | Variance |
|---|---|---|---|
| A. Global Functioning | 4,74 | 5,38 | 0,65 |
| B. Learning outcomes Acquisition | 5,06 | 5,00 | -0,06 |
| C. Assessment Tools | 4,71 | 4,99 | 0,29 |
| D. Operational Functioning | 4,98 | 5,45 | 0,47 |
| E. Student Performance | 4,99 | 5,05 | 0,06 |
| Total Average | 4,89 | 5,16 | 0,27 |

Regarding the second question, in the case of dimension D, the empirical evidence confirms the questions, since in ITE where there may have been the influence described in first question, there is a nearly identical result between expectations and satisfaction, while at IMT, where there had been such influence, there is a substantial gain between expectations and satisfaction.

Table 5 – Relationship between Satisfaction in year n-1 and Satisfaction in year n

Degree course in IT Engineering (ITE)

| Dimension | Satisfaction 2009/2010 | Satisfaction 2010/2011 | Variance |
|---|---|---|---|
| A. Global Functioning | 4,85 | 5,03 | 0,18 |
| B. Learning outcomes Acquisition | 4,66 | 4,97 | 0,31 |
| C. Assessment Tools | 5,17 | 4,97 | -0,20 |
| D. Operational Functioning | 5,19 | 5,46 | 0,27 |
| E. Student Performance | 4,84 | 4,69 | -0,15 |
| Total Average | 4,93 | 5,05 | 0,12 |

Degree Course in Industrial Management and Technology (IMT)

| Dimension | Satisfaction 2009/2010 | Satisfaction 2010/2011 | Variance |
|---|---|---|---|
| A. Global Functioning | 5,50 | 5,38 | -0,12 |
| B. Learning outcomes Acquisition | 5,22 | 5,00 | -0,22 |
| C. Assessment Tools | 5,49 | 4,99 | -0,49 |
| D. Operational Functioning | 5,14 | 5,45 | 0,32 |
| E. Student Performance | 4,81 | 5,05 | 0,24 |
| Total Average | 5,29 | 5,16 | -0,13 |

Finally, in the comparative analysis about the third question, it appears that the satisfaction behavior between two degree courses is different. In the first case, there is a general increase in the average level of satisfaction, in the second case there is a general decrease in the average level of satisfaction. However, it is once again in dimension D that the best results are verified.

## 5 CONCLUSIONS AND FUTURE WORK

Higher Education, in its training component, should no longer be centred on the transmission of knowledge, but to move permanently to a student-centered approach. This, will require that the teachers methodological approach on the UC taught, have on the one hand, a scientific concern in its definition and, on the other increase student motivation by meeting their needs and expectations.

Each step of the methodological approach to the teaching/learning process presented (Planning, Information, Lecturing, Assessment, Feedback and Monitoring) appears extremely important, as each of them can be seen as a reality to be studied individually.

The methodology presents an inter-relationship between each phase that is especially important to its success, since it is through ICT that all this process is developed, becoming agile, dynamic and motivating.

This study showing very preliminary results. However, provides interesting insights on the importance that the adopted methodological practices may have on student satisfaction. Through the surveys held, it was verified that the Operational Functioning, which specifically measure on the adopted methodology, obtained the best results according the research questions posed.

In future we intend to strengthen information gathering through surveys, not only in the UC in question, but also in other UC, in order to compare results.

The aim, is also to review and validate the survey, in order to test the different dimensions and the correlations between data obtained in each of them. Finally, we will enter the third stage of investigation cross checking the data gathered in the expectations and satisfaction survey and the academic results obtained by the students.

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