Improving the Quality of e-learning Courses in Higher Education through Student Satisfaction

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Abstract—Thepurpose of the research is to characterize the levels of satisfaction of the students in e-learning post-graduate courses, taking into account specific dimensions of the course which were considered as benchmarks for the quality of this type of online learning initiative, as well as the levels of satisfaction towards each specific indicator identified in each dimension. It was also an aim of this study to understand how thesedimensions relate to one another. Using a quantitative research approach in the collection and analysis of the data, the study involves the participation of the students who attended on e-learning course in 2010/2011. The conclusions of this study suggest that online students present relatively high levels of satisfaction, which points towards a positive experience during the course. It is possible to note that there is a correlation between the different dimensions studied, consequently leading to different improvement strategies. Ultimately, this investigation aims to contribute to the promotion of quality and the success of e-learning initiatives in Higher Education.

Keywords—e-learning, higher education, quality, students satisfaction

I. INTRODUCTION

THE access to information provided by internet and the collaboration in knowledge construction enable by web-based networking demands for dramatic changes in educational institutions, which are expected to embrace this new tools and environments and to fruitfully use them to teach student witch are expected to act as active citizens in the social and financial changed global economy.

The accelerated technology evolution and the social transformation of nations have opened space for a new educational paradigm to emerge and to benefit students.

E-learning presents itself as a reality emerging from the most recent needs of a society which is characterized by high levels of competition and scarcity of time. The guidelines of the Bologna Declaration have heavily impacted higher educationby requiringinnovative political measures for the creation of an European Space for Higher Education. It also highlighted theclear need for the use of technology in teaching and learning processes, together with the promotion of lifelong learning and students and professors mobility, both physically and virtually.

Despite the late inclusion in Portuguese teaching practices, when compared with other countries of the European Union, e-learning practices are increasingly becoming a reality in national Higher Education [1], as a growing effort from institutions can be seen in including this modality of learning in their educational offers.

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However, in Portugal, only 3% of all graduate and post graduate students are enrolled in e-learning initiatives [2]. However, a growth in the number of e-learning projects in Higher Education has been observed. The 'Contracts of Confidence in Higher Education for the future of Portugal' [3], signed by the Government and Higher Education Institutions (HEIs), have played a strong role in the launch of new initiatives.

The growth in studies developed in the area of e-learning [4], [5], [6], [7], [8], [9] is indicative of a high impact and increased interest in e-learning in the most varied scientific areas.

Despite the increased number of e-learning initiatives, there is still reduced knowledge regarding the experience from the perspective of the students involved [10]. They are the central elements of the educational process. Therefore, every aspect of the learning process, every practice of the educational institutions need to be take into account an analysed in order to be used as an optimizer of the quality of their learning experiences.

Consequently, this study aims to analyse the students level of involvement in a learning initiative developed in a post graduate program in 2010/2011. The authors expect that the results of this study can contribute to (i) identify relevant issues regarding e-learning courses quality assurance and (i) a better understanding of e-learning courses benefits from students point of view.

A. Studentsatisfactionanalysis

Similarly to conventional face-to-face classroom teaching, HEIs feel the need to evaluate and monitor the processes and results of e-learning initiatives, as a way of readjusting and improving student retention and increasing courses quality.

This study assumes the purpose of gathering all the relevant factors identified in literature as determinants of students satisfaction regarding their experience in e-learning courses. Monitoring student satisfaction is an essential issue to address in the implementation of any organizational assessment or quality assurance system in higher education institutions, because students expectations and needs should be one of the elements that dictate the path to institutional improvement [11].

It is crucial to know which factors influence student satisfaction in distance learning or web-based learning, because they can be used as regulatory indicators of the adequacy of the course design and the fitness of the virtual learning environment. They can also help identify effective strategies and services for students' online support, contributing to promote student's general satisfaction with these new course formats [12].

B. Relevant factors of satisfaction in e-learning courses

Different studies point out different factors in the analyses of student satisfaction in e-learning courses. In this section we identify the most referred factors, according to their influence on students' level of satisfaction.

Based on a meta-analysis of the recently published literature in the area of e-learning the following elements were identified as playing a central role in student satisfaction in e-learning courses: flexibility, contact and interaction with the instructor, feedback, clarity and adequacy of content, simplicity of access to resources, technological self-efficacy, technical support and student guidance are some of the most referred factors [13].

Eom, Wen and Ashill[14] shows that factors such as the course structure, student motivationfor learning, students personal learning style and knowledge and the enabling attitude of the instructor, investment in interaction and feedback greatly influence student satisfaction.

Palmer and Holt[12] emphasize the importance of aspects suchas (i) students levels of confident in their ability to communicate and learn online; (ii) students clear understanding of the course requirements, and (iii) students access to guidance so that they can understand their progresses throughout the learning process. In this particular study, which was based on data collected through online questionnaire submission, the items where students evidenced the highest levels of satisfaction were related to the different type of activities conducted in the online environment, the access to the resources that were made available and the easiness of the submission process of each online assignment.

In 2009, [15] carried out equally relevant research that showed that online interaction contributes significantly towards the level of student learning and achievement, as well as their satisfaction in the learning process conducted in a technologically-mediated environment.More recently, in a study that involved 2196 students from 29 Australian universities, it was possible to see that instructors professional competences, mainly ict-related skills but also interpersonal communication are quite significant. The level of knowledge of the instructor, his role as a facilitator and his ability to support and give advice to students, stood out as main factors of influence of student' satisfaction. With a small impact but also important, were students attitudes and competences, specifically motivation andself-regulating skills. Some characteristics of course design were also pointed out: opportunities of conducting collaborative learning activities and the explicitness of the course structure [10].

In the opposite direction, the lack of quality in the feedback obtained on online assignments is frequently indicated as a factor that negatively influences student satisfaction in online courses. In a research focused on the association between online instructors practices and student satisfaction it was possible to find significant correlations between students high level of satisfaction and (in a discording order or relevancy), instructors enthusiasm, clarity of expectations, the accessibility of the instructor, the online activities proposed, the social environment created, the level of instructor proficiency towards technology, as well as his support towards students learning [14], [12], [16].

Infra-structures and technological aspects, such as the website or learning management system which supports the e-learning courses, its usability, its user-friendly interface, its easiness to access and adequate technical support are also factors that influence student satisfaction in online learning [17], [18] if guaranteed they can have an enabling power, but if overlooked they will act as critical barriers. Students' personal abilities to act and interact in a technologically-mediated environment also evidences to impact students overall satisfaction towards online courses. In this investigation, the technological abilities of the students were previously identified as relevant for registering in the online post-graduate course. A moderate level of confidence in ICT use was one of the requirements described in the selection process. The course is planned in a way that it is essential to guarantee the best possible adaptation of students to the LMS platform, and as such there a preparatory module (Online Adaptation Week) which precedes the beginning of the course made available for all online students. Any possible discomfort of students towards the use of technological tools is therefore minimized before the course is started.

II. JUSTIFICATION FOR THE RESEARCH

There is remarkable growth in the number of HEIs that invest in the development and implementations of e-learning projects. However, there is still a strong need to know and understand the factors that contribute to provide student with a satisfactory learning experience in this type of initiative. In the European context, there is still a gap in evaluation studies that identify the advantages of a e-learning courses, both on teaching and learning methods, through students point of view, more specifically, studies that tries to add some knowledge regarding the understanding of how student satisfaction can be characterized and achieved in online courses.

For this purpose, the authors identified the following dimensions of analysis, which will be considered individually and as a whole:

(i) Course design: course general structure and organization.
(ii) Coordination: tasks and responsibilities of the course coordination.
(iii) Faculty and tutors: different abilities, actions and strategies chosen by the teachers and tutors in the development and implementation of the course.
(iv) Curricularprogram: programmatic content of each curricular unit of the course.
(v) Resources: quality, interest and applicability of the materials selected to the course.
(vi) Learning methodologies: learning methods, task and assignments used to cover the different content considered in each curricular units.
(vii) Evaluation system: adequacy of the evaluation methods and motorization strategies of the progression of students' learning.
(viii) Support services: services implemented to support students, both regarding technical and administrative academic needs.
(ix) Technological infrastructures: learning management system used, reliability to support the course.

This study presents the main factors in student satisfaction in e-learning initiatives, contributing to the development of better and more solid work methodologies in this area, in Higher Education courses.By studying students' level of satisfaction in each 9 dimensions, this study aims to systematize information that can be used to developed more efficient ways of designing e-learning courses on higher education institutions for achieving this purpose.

This study focuses on the experiences of the group of students who attended the first e-learning post-graduate programin the University of Lisbon, a Master degree in Education, which began in the academic year of 2010/2011 in the Institute of Education.

A. Research goals

Researchin this field that assumes students point of view is still scarce. However, there are recentinternational studies that evaluate student satisfaction in online courses relation to different dimensions of quality analysis [19], [17], [18], [10], [20], [21]. These studies allow the identification of different factors that influence the satisfaction and involvement level of students in e-learningcourses, indicating their effects on learning.

With the aim of contributing to the growth of knowledge in this area, this study assumes the following goals:

1) To analyze student satisfaction at a general level as well as a specific level according to the 9 dimensions identified and their indicators.
2) To understand how each dimension of the course relates to one another.
3) To identify the main strengths and weaknesses on the course indicated by the students and therefore establish guidelines for its general improvement.

III. METHOD

A. Participants

The participants of this study are the students of the first year of the Master degree in Education, in the specialization in Information and Communication Technologies and Education, of the Institute of Education of the University of Lisbon. The study involved the entire population of the course. Initially, 33 students participated (N=33), and at a later part of the study, 31 students.

Of the 33 initial participants, 23 were female and 10 male. Their ages varied between 28 and 55 years, and they were geographically spread over the 12 districts of the country, all of them had Portuguese nationality. About 39% of the participants had no prior experience in e-learning courses and 33.3% had previously participated in e- learning initiatives as students.

B. Research Design

This research assumes a quantitative methodology, and can be classified as a descriptive-correlational study, focusing on the understanding of selected phenomena, with particular emphasis on the objectivity of procedures and quantification of measurable variables.

The information gathered were translated into numeric expressions in order to enable their classification and analysis. The online questionnaire was the technical procedures used for data collection.

The research design involved three distinct moments of data collection and analysis: (i) data collection about student expectations before the start of the course and after the Online Adaptation Week (preparatory module) (ii) data collection about student satisfaction levels and (iii) comparative analysis of the data collected in the previous moments. This article focuses only on the second moment of the investigation.

Students level of satisfaction were analysed in the following dimensions: (D1) course design; (D2) coordination; (D3) faculty and tutors; (D4) curricular program; (D5) resources; (D6) learning methodologies; (D7) evaluation system; (D8) support services and (D9) technological infrastructures.

Each dimension was operationalized bythe indicators presented in table I. These indicators were used to constructedthe questionnairefor scoring students level of satisfaction. Their emerged for the framework use to guide the development of e-learning courses in University of Lisbon, which was developed by E-learning Lab UL[1]

TABLE I
DIMENSIONS AND INDICATORS OF ANALYSIS OF E-LEARNING COURSE

DIMENSIONS	INDICATORS
D1) Course design	▪ Articulation and coherence of the course design ▪ Relevance to current times and innovative aspect of the study plan ▪ Clarity in the definition of the curricular goals of the course ▪ Adequacy of the work strategies proposed for the course's goals ▪ Adequacy of the online material and resources used ▪ Promoting of development of different types of competences ▪ Congruence between different curricular units ▪ Adequacy of the technology and platform used ▪ Workload adequacy ▪ Administrative, technical and pedagogical support mechanisms ▪ Involvement and sense of community promoted between students ▪ Attention to ethical and legal aspects
D2)Coordination	▪ Clear requirements in students selection ▪ Selection process of students for the course ▪ Adequate level of coordination between teachers, tutors and other professionals involved ▪ Promoting of interdisciplinary and articulation of content ▪ Guidance and support to students in matters of course development and of online platform organization ▪ Clarification of general doubts about academic and administrative aspects of the course ▪ Mediation between students and academic services ▪ Dissemination of relevant information and general events ▪ Solving of critical situations identified throughout the course
D3) Faculty and tutors	▪ Access and approvability ▪ Scientific and academic mastery of topics ▪ Degree of proficiency in the use of the LMS platform and other online communication systems.

[1]More information in http://elearninglab.ul.pt/

	▪ Active use of the platform and of other online applications and tools ▪ Coherence and explicitly in the definition of goals, timeframes and learning tasks ▪ Ability to stimulate and moderate online participation ▪ Ability to adapt to specific learning styles ▪ Concern with student guidance, feedback and improvement suggestions ▪ Encouragement and guidance in online discussion and sharing of ideas ▪ Clarification of doubts and effective response to students' needs
D4) Curricularpro gram	▪ Logical sequence and organization of course content ▪ Adequacy of curricular content to the course goals ▪ Modular organization of topics ▪ Relevant and updated content ▪ Interest in the selected topics ▪ Easiness of access to content ▪ Broad range of content addressedin different curricular units ▪ Content adjusted to online learning ▪ Applicability and relevance of content to students professional practice
D5) Resources	▪ Visual appeal and interest of the resources ▪ Usefulness resources ▪ Access to the resources ▪ Easiness of navigability through the resources ▪ Resources relevancy to current times ▪ Ethical and legal concerns regarding resources used ▪ Didactic and curricular coherence of the resources and activities proposed ▪ Graphic richness of the resources ▪ Resources diversity of formats ▪ Interactivity of the resources ▪ Accessibility (respect for regulations concerning students with special educational needs and/or technical limitations)
D6) Learning methodologies	▪ Adequate diversity of learning methodologies ▪ Clarity and objectivity of tasks and assignment ▪ Selection of methodologies that facilitate learning ▪ Practical applicability and usefulness of the assignments ▪ Clear information on the deadlines and time requirements tasks and assignments ▪ Adjusted distribution of time for task completion ▪ Frequency and duration of synchronous online sessions ▪ Establishment of rules and guidelines for online participation ▪ Encouragement of research-skills development ▪ Encouragement of digital literacy development ▪ Stimulation of online interaction between faculty and students ▪ Stimulation of online interaction amongst students
D7) Evaluation system	▪ Existing assessment system (general and alternative) ▪ Evaluation criteria ▪ Adequacy of assessment regarding methods course's goals ▪ Clear definition of processes and assessment elements ▪ Use of different evaluation methods (diagnostic, formative, summative and self-assessment) ▪ Availability of self-regulation mechanisms ▪ Flexible and adequate assessment moments ▪ Timely and adjusted feedback ▪ Coherence in the different forms of assessment between different curricular units
D8) Support services	▪ Access to academic services ▪ Access to technical services ▪ Access to learning support services ▪ Efficiency in registration and payment processes ▪ Articulation between the different sources of information (website, platform, etc.) ▪ Centralization of services that maintain the technological infrastructures
D9)	▪ Flexibility of the LMS

Technological infrastructures	▪ Interactivity of the LMS ▪ Adequacy of the chosen technological systems and applications ▪ LMS usability and intuitiveness of the interface ▪ Stability, reliability and robustness of the LMS ▪ Speed of the access to LMS ▪ Quality of the LMS in the management of activities an resources curricular units ▪ Appearance of the online spaces (LMS) ▪ Diversity of the functionalities available on the online LMS ▪ Integration of *Webtools* 2.0 ▪ Use of online synchronous communication systems provided by the University ▪ Use of other synchronous and asynchronous communication systems (e.g. Skype) ▪ Availability of tutorials ▪ Respect by general accessibility requirements ▪ Respect for ethical and legal issues

These indicators were use in the questionnaire presented to students online (supported by LimeSurvey - version 1.91) and integrated in the LMS moodle.

The questionnaire was constituted the 93 items organized in 9 dimensions. Items assumed 5-point Likert format (5 – highly satisfied and 1 – poorly satisfied). The instrument was previously submitted to validation procedures. It involvedthe expertise of three specialists who reviewed the instrument. Internal consistency analysis, Cronbach's Alpha was also considerate. Both the global student satisfaction score (93 items) and the general satisfaction score (9 items) revealed high levels of consistency ($r=.991$; $r=.958$)

IV. RESULTS

Data collected from the answers of 31students reveals favorable levels of satisfaction regarding the global evaluation of the course and each of its nine dimensions (table II). Results show that students were satisfied with the development of the course in all dimensions analyses.

TABLE II
OVERALL AVERAGE LEVEL OF STUDENTS'SATISTACTION

N=31	Min.	Max.	Mean	Standard Deviation
Total Score	1.34	4.73	**3.71**	.729
D1 (coursedesign)	1.25	4.75	3.64	.79
D2 (coordination)	1.56	4.89	3.66	.78
D3 (faculty and tutors)	1.40	5.00	3.90	.81
D4 (curricular program)	1.33	5.00	3.95	.82
D5 (resources)	1.27	5.00	3.87	.79
D6 (learning methodologies)	1.25	4.83	3.66	.80
D7 (evaluation system)	1.44	4.89	3.69	.76
D8 (support services)	1.00	5.00	3.11	.98
D9 (technological infrastructures)	1.53	5.00	3.92	.80

By analyzing each of the dimensions it is possible to verify that the mean values registered suggest a moderate to high level of studentssatisfaction. The lowest mean value (but still moderate) corresponds to the 'support services' dimension, which shows that students experienced lower levels of satisfaction when questioned about the way technical problems and academic issues have been solved by the

services. In this particular dimension, the indicator with the lowest mean was 'centralization of services that maintain the technological infrastructures'.

In contrast, the 'curricular program' dimension scored the highest mean, showing that students were highly satisfied with the organization of the curricularprogram of the course and with the different content covered by each curricular unit of the course. This aspect was also referred to as one of the strong reason for students to hypothetically enrol in the course in the future, which reinforces the satisfaction caused by this factor. However, quite a few students suggested that the content should be more diverse, more practical, applicable and with a lighter theoretical focus, which should be considered as one of the aspect that could be improved.

Observing the general evaluation of all the dimensions, the students continue to express an inferior degree of satisfaction in the dimension 'support services'. The dimension where their level of satisfaction was highest is 'faculty and tutors', favourably evaluation their actions and strategies in the development and management curricular units of the online teaching competences (table III).

TABLE III

GENERAL LEVEL OF STUDENTS'SATISFACTION

N=31	Min.	Max.	Mean	Sd. (σ)
Score Total	1.11	5.00	3.77	.809
D1 General(coursedesign)	1	5	3.81	.91
D2General (coordination)	2	5	3.71	.90
D3General (faculty and tutors)	1	5	4.03	.91
D4 General (curricular program)	1	5	3.90	.94
D5General (resources)	1	5	4.00	.97
D6 General (learning methodologies)	1	5	3.77	.92
D7 General (evaluation system)	1	5	3.74	.86
D8 General (support services)	1	5	3.10	1.08
D9 General (technological infrastructures)	1	5	3.87	.92

In addition to this information, participants also reinforced the importance of having access to regular and timely feedback from teachers/tutors, showing that for promoting students satisfaction in online courses it is necessary to continue to investing in the improvement of online moderation strategies, with a particular emphasis on the quality and regularity of the feedback provided to students. When the feedback of online tasks is not prompt, structured with adequate comments, practical and individually designed in a way that encourages participation, a negative influence can arise in student satisfaction [12], [14]. This clearly takes critical influence in student satisfaction, translating directly into the quality of e-learning courses [13], [22], [18].

From the 93 indicators that constitute the dimensions analysed, it was also possible to identify the indicators that present the lowest and highest mean levels of satisfaction. Students showed the lowest levels of satisfaction towards the 'Adjusted distribution of time for task completion' indicator

('learning methodologies' dimension). The course's workload is described by students as a limiting factor, influencing their performance in a non-productive way. Studentsanswer evidenced that there was an excessive number of curricular units occurring simultaneously, mostly during the second semester. Overload is incompatible with most of the online students, who are full time working students. They conclude that this overload negatively affects the overall quality oftheir learning process and as well as compromising their professional practice. This aspect is highlighted as an area of further improvements. A balance between time available and student workload must be successfully achieved.

By trying to understand how the different dimensions of the course associate with students levels of satisfaction. A correlational analysis was conducted (table IV)

TABLE IV

CORRELATION ANALYSIS

r	D2	D3	D4	D5	D6	D7	D8	D9
D1	.85**	.81**	.84**	.78**	.84**	.84**	.62**	.85**
D2		.81**	.79**	.67**	.85**	.77**	.68**	.84**
D3			.89**	.81**	.93**	.81**	.64**	.89**
D4				.91**	.88**	.78**	.50**	.88**
D5					.78**	.75**	.39*	.85**
D6						.87**	.72**	.91**
D7							.63**	.86**
D8								.69**

(*correlation is significant at the $\alpha = 0.05$; **correlation is significant at the $\alpha = 0.01$)

It was possible to conclude that the different dimensions have a strong positive correlation with each other, which also evidences a good consistency of the instrument. A strong and significant correlation were found between the 'curricular program' dimension and the 'resources' dimension ($r=.91$; $p=.001$), which makes it possible to conclude that there is a connection between the curricular organization of the program and the quality, interest and applicability of the materials used to incorporate the selected contents. The 'learning methodologies' dimension also presents a strong correlation with the 'coordination' ($r=.85$; $p=.001$), 'faculty and tutors' ($r=.93$; $p=.001$), 'evaluation systems' dimensions ($r=.87$; $p=.001$) and 'infra-structure' dimension ($r=.91$; $p=.001$). This shows a strong association between aspects related to learning methodologies, the ways in which content is covered in the curricular units, the learning dynamics created, the tasks and assignments presented and de assessment methods.Highly significant correlations was also found between infra-structures and support systems ($r=.86$; $p=.001$). This makes possible to conclude that e-learning methodologies play a leading role in online courses, promoting learning quality, student involvement in activities and acknowledgement of this specific context.

V. CONCLUSIONS

From the previously results it is possible to derive relevant implications and practical contributions that can be considered with the aim of elevating the quality of e-learning initiativesin Higher Education Institution. One of the most relevant conclusions, although the reduce number of participants in this study, is the high level of student satisfaction regarding the

course attended, not only in a global perspective of analysis but also in a descriptive approach where 9 dimensions were distinguished. This general level of satisfaction with e-learning initiatives can be seen as a good premonition for the future of web-based online learning initiatives in higher education, more specifically in post-graduate degrees.This is indicative of a growing level of student involvement in these specific approaches to learning. The students were mostly satisfied with the 'curricular program' and 'faculty and tutors' dimensions and specifically with indicators as 'easiness of access to content'('curricular program' dimension) and 'ethical and legal concerns regarding resources used' ('resources' dimension).

Previous research in the e-learning domain have already highlighted the importance of the curricular program contents and its clarity as one of the most important factors in student satisfaction in e-learning initiatives [13]. Online students tend to select e-learning courses that evidences to be most suitable to their learning needs therefore the transparency of the contents and topics that will be covered in a specific online course need to be as explicit and concrete as possible. This can stimulate the course attractiveness as well as promote a higher level of adjustment in student' expectative and consequently a higher level of students' satisfaction. The role of teachers and tutors, online teaching competences, approachability and adaptability to students learning styles was one of the critical factors evidenced by this study. The quality of staff is essential in the development of any educational initiative, contributing in a significant manner for student achievement and satisfaction, and online courses are no exception[14], [22], [18], [10]. Quite the opposite in online learning faculties and tutors are a symbol of the institution, few contacts are conducted between the higher education institutions and the students that aren't mediated by faculties or tutors.

They also have a leading role in the management of the 'interpersonal relationships' dimension of the learning process, not only they define relationship between student and teacher but also regulate the relationship promoted between student and between student and content.

In contrast, the 'Support services' dimension revealed itself to be the theaspect that showed the lowest level of student satisfaction, with 'Centralization of services that maintain the technological infrastructures' ('Support services' dimension) and 'Adjusted distribution of time for task completion' ('learning methodologies' dimension) being the indicators with the lowest satisfaction levels. This shows that before it is enrol in e-learning initiatives, HEIs need to guarantee that all the required support systems (technical, administrative and academicals) are ready to effectively respond to online students' needs.

In this study results showed that is presently essential to improve the support services to introduce procedures that enable services to function efficiently with each other in a more articulated way.

This study contributes to a more clear understanding of the impact of the distinct dimensions of a e-learning course, in students satisfaction, at the same time that allows a detailed analysis of the specific role undertakes by each dimension, also keeping in mind the articulation between them.

This study also shows that the role as each particular dimension need to be see through its direct effect of student satisfaction, but also by it meditative or indirect effect, supported by the significant correlations found between different dimensions.

The results reinforce the importance of an integrated approach in the analysis of the different dimensions, of a e-learning course which was also seen as gaining advantages in being seen through a multidimensional perspective.

It is essential to emphasize the importance of taking into account the dimensions and indicators with the highest levels of satisfaction, because they have the power of promoting a higher sense of satisfaction and at the same time can minimize the effect of dissatisfaction factors. The quality of faculty and tutors and curricular program can be valued. At the same time it is necessary to increase the investment in the improvement of the dimensions and indicators with the lowest levels of student satisfaction, in this case, support services.

The opinions and suggestions given by students are useful as they call attention to the elements that need to be reviewed and whose quality should be improved, as is the case of student feedback, the appropriate workload. A more articulated work between curricular units research and the improvement of technical support services.

This research made it possible to characterize the different dimensions of e-learning course, that correspond to the structural elements on the design, development, organization and support to an online course and that also reflect the issues that can be addressed to ensure its quality. This dimensions and indicators are seen as quite usefully to quality assurance process of e-learning initiatives in higher education. Therefore, this study supported the construction of a guiding framework for e-learning courses. An instrumentthar may be considered as a contribution to the research community in this specific field, as it encompasses indicators that mirror the key factors in determining student quality of satisfaction and that portray the quality of online courses.

Today's quality assurance systems, by which HEIs need to guarantee the quality regulations of their educational offer [23], assumes that the evaluation results of any course need to be used for the continual improvement of that course and therefore guaranteed high quality education [24]. In this research it is assumed that analysing the student learning experiences stronglycontributes to a clear understanding of
(a) the reasoning behind the today's importance of HEIs to invest in this new ways of teaching; (b) encouraging the success and retention of students in e-learning initiatives in Higher Education, (c) providing relevant inputs for the development of an evaluation system for online learning and (d) developing better and more solid e-learning methodologies in Higher Education courses, particularly in Europe.

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