QUALITY OF BLENDED LEARNING WITHIN THE SCOPE OF THE BOLOGNA PROCESS

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ABSTRACT

This article builds on existing data about the blended learning approach in higher education. It presents the theoretical framework and data of an empirical study conducted at the University of Porto in Portugal involving teachers who won the E-Learning Prize of Excellence in the period between 2006 and 2010. The main objective of this article is to contribute to an understanding of the value of blended learning within the scope of the Bologna Process which began in 2006 in this University. We consider blended learning as a flexible and integrated approach that combines different forms of communication in synchronous and asynchronous moments. To gather data, we conducted survey questionnaires among teachers and students as well as semi-structured interviews and document analysis in a cyclical and interactive process of data collection, data reduction, data display and conclusion drawing/verifying. The research results highlight the importance of teacher intervention to create an environment that stimulates processes of cooperation, autonomy, social integration and the development of learning communities, important in this competitive world.

INTRODUCTION

This article focuses on blended learning (b-learning) as an approach to learning delivery in higher education. It was developed from a study aimed at understanding the process of meaning constructions attributed to learning management systems (LMS) and interpretation of them within educational paradigms.

The b-learning concept is understood as "a blend of e-learning with other approaches" (Littlejohn & Pegler, 2007, p. 10). According to Heinze and Procter (2006, p. 12), "Blended learning is learning that is facilitated by the effective combination of different modes of delivery, models of teaching and styles of learning and founded on transparent communication amongst all parties involved with a course".

In this study we produced a framework that allows for greater understanding of the value of b-learning in higher education and answers the following questions:
What are teachers' motivations for creating b-learning environments in the teaching process?
What is the relation between b-learning and the learning-teaching paradigm pointed out by the Bologna Process?
What are the capabilities and limitations of b-learning in prefiguring learning communities?

Background

We recognize that internet-based technology is the key to the creation of a learning society and has an impact, both in terms of increasing pupils' opportunities to enterand remain in higher education—and quality and effectiveness related to obtaining better learning results (Herrington, Reeves, & Oliver, 2010). However, several studies point to the underutilization of this approach (Bonk & Graham, 2006; Graham 2006; Littlejohn & Pegler, 2007). They show that the introduction of the technology does not necessarily imply development and upgrading of pedagogical skills. This article is based on a study of the use of b-learning at Porto University between 2006 and 2010, when it began the organization of the courses in the Bologna Process.

HIGHER EDUCATION AND PURPOSES OF THE BOLOGNA PROCESS

Higher education has been affected by the internal and external regulations of the Bologna Declaration (1999) and the consequent Bologna Process. In general terms, this process is aimed at fostering transparency in higher education institutions through the use of similar criteria and training levels that envisage a European space of higher education (The European Higher Education Area, 1999).

This European discourse, in the interest of higher education training quality, includes suggestions for implementing change in teaching methods. These are enounced as necessary to reach a number of objectives, one of which is the development of skills for lifelong learning.

The desired changes and expectations initially established for 2010 were postponed until 2020 at the Louvain Ministerial Meeting (LMM, 2009). In terms of priorities, the following objectives of the process were reiterated: strengthening of the EES (European Education Space) through mobility, competition and collaboration in the European space; learners at the centre of the learning process; creation of new opportunities that reflect students' socio-cultural diversity; need for certification of skills and clear mechanisms of regulation and quality control in teaching; and the need for Higher Education Institution (HEI) internal regulation at the financial level through partnerships and other financial sources so that education, research and development contribute toward innovation and creativity.

The Bologna Process, through pedagogical discourse, implies either organizational or pedagogical changes. In Portugal, legislation establishing the suitability of courses according to Bologna (Decree-Law 74/2006) has pointed to the need to change the model based on acquisition of knowledge to a model based on learning and development of skills. On the other hand, in Portugal the Educational System General Law (Decree-Law 49/2005) established, among others the:

- creation of the necessary means by which all citizens will take advantage of their life-long learning, enabling them to use it as an asset to be valued by higher education institutions, which will now have the responsibility of selecting students from among people who have past the average reference age for enrolling but who have significant professional experience;
- adoption of a three cycle, higher education organizing model;
- transition from a knowledge-transmission based education system to a skill-development based system;
- introduction of a European system for transferring and gathering units of credit which allows greater flexibility of a course studies plan, by way of the distribution of the curricular structure among units of credit which are based, not only on class hours but also on the time spent and efforts made by the students on all tasks dealing with their learning process.

These changes in higher education, within the Bologna Process, represent the transition from centralisation of transmittal teaching towards awareness of the added value of a learning process in which students have a more active role in building knowledge. They also include a social dimension that emphasises a less hierarchical and more inclusive education. Besides underlining the role of orientation and interaction in promoting the desired changes, Redecker, Ala-Mutka and Punie (2008) stressed the importance of promoting learning flexibility and multiplying ways to certify/validate skills.

To summarise, in light of existing evidence, the exercise of teaching in higher education implies continuous learning of what it means to 'be a teacher' in the face of constant demands and changes in the contemporary world and in part, making that more visible according to the guidelines of the Bologna Process. It also requires that new spaces and places for interaction be made available beyond the conventional classroom.

Until now, the development of new spaces and availability of resources have been achieved through the conjugation of synchronous (face-to-face and online) and asynchronous modalities as well as b-learning methodologywhich, according to Hramiak (2010, p. 48) "provide a stronger sense of community among students than either traditional or fully online courses".

SUPPORTING CONCEPTS OF B-LEARNING
Traditionally, b-learning has been considered to be a hybrid model that combines classroom teaching with electronically supported learning and teaching or e-learning (Rosenberg, 2008). Oliver and Trigwell (2005) criticised such use of the concept of b-learning because it simply describes practices and attributes to learning something that only applies to teaching or instruction. Thus, they posited a reconstruction of the concept from theories of learning, stating that this subversive (but logical) reinterpretation shifts the emphasis dramatically from teacher to learner, from content to experience and from naively conceptualised technologies to pedagogy.

In terms of the present study, b-learning is learning that is facilitated by the effective combination of different modes of delivery, models of teaching and styles of learning which is founded on transparent communication among all parties involved (Graham, 2006; Heinze & Procter, 2006;Leite et al., 2009).

We considered b-learning situations as those in which higher education teachers demonstrate a flexible and integrated approach that combines different forms of communication in synchronous and asynchronous moments through an LMS platform. We believe that the real indicator of b-learning is not the amount of hours online or face-to-face, but the effective integration of these moments in education (Garrison & Kanuka, 2004).

B-learning at Porto University
In the last few years Porto University, as is the case with other state institutions of higher education, has provided technological and pedagogical support to its teachers who choose to use the online learning resources to complement their in-person lessons. This fosters the transition from transmittal teaching to one focused on the student and the development of personal, social and professional skills.

According to Bonk and Graham (2006), this process of change can be observed in different phases: initial permission for b-learning, reinforcement through the use of b-learning and finally, pedagogical transformation as a result of b-learning.

We agree with Garrison and Anderson (2003), that pedagogical change is apparent in "communities of inquiry" as well as in teaching, social and cognitive presence. Only the conjugation of these three elements allows for learning in the community. Moreover, as noted by Wenger, White and Smith (2009), the community that learns offers a view of the usefulness of technology because that community is not defined by space or personal characteristics but by the potential of learning together. To support this idea, those authors defined the intersection space between community and technology as "digital habitats". Unavoidably, this learning-friendly environment endures constant constructions and reconstructions in reaction to individual contributions and collective "resignifications", thus transforming and adapting the pedagogy (Carr & Chambers, 2006; Richards, 2006).

To recognise and add value to practices that meet higher education objectives (in part as a consequence of the Bologna Process), Porto University annually awards the *E-Learning Prize of Excellence (EPE)*, *Porto University*. The intention is to motivate the educational use of new technologies and to create an academic community, thus revealing and assessing interest in the application of b-learning to improve the quality of teaching and learning.

In this study we attempt, through empirical research, to understand what motivates teachers to use b-learning, changes in the curriculum they attribute to this technology and the limitations and potentialities they recognise in this resource, related to creating conditions for pedagogical success and the development of "learning communities" (Palloff & Pratt, 2007) within the scope of the Bologna Process.

METHODOLOGICAL APPROACH
This study was set within a constructivist paradigm (Attard, Di Iorio, Geven, & Santa, 2010; Santa & Geven, 2010). Hence, a methodological procedure that progressively materialises was appropriate to allow for interpretation of the process of building meaning attributed to LMS.

Quality is an aspect we accounted for in the methodological procedure. We used data from several sources (Yin, 2011; Maxwell & Miller, 2008; Flick, 2004) and had specialists in education and in information technology validate instruments for handling data. We also used inter-methodological combinations (methods triangulation), from which we continued to document analysis of the institution's data.

The data analysed included those submitted by University of Porto faculty members when competing for the EPE that described their online environment, methodologies, objectives, and evaluation methods. We also used documentation available at the university's official website and related publications.

To gather data we conducted survey questionnaires among teachers and students as well as semi-structured interviews with all teachers who had won the EPE, in a cyclical and interactive process of data collection, data reduction, data display and conclusion drawing/verifying (Miles & Huberman, 1994).

Survey questionnaires
There were two survey questionnaires: one for the teachers and the other for the students.

The first questionnaire was available on-line for teachers of Porto University who used b-learning as a resource from October 17, 2009 to November 11, 2009. Its main objective was to gather initial data about general aspects of the use of b-learning at this university. The 21 teachers who answered the questionnaire were between 29 and 69 years old and 50% were female. In addition, 72% had been teachers for more than 10 years, 22% between 1 and 5 years and 6% had taught in higher education between 6 and 9 years.

The second survey questionnaire was made available on-line for teachers and students who won the EPE between April 5, 2010 and May 17, 2010. It had as its objectives: i) to consider how the use of b-learning by

award-winning teachers of the curricular units contributed to educative success and; ii) to determine how this contributed to the learning environment level of organisation and performance and to the development of cognitive and social skills. The survey was completed by 73 students between 18 and 29 years old. In total, 41% were female and attending courses in Information Technology Engineering, Pharmaceutical Sciences, Nutritional Sciences and Management.

Interviews
In this study we chose to interview, using a semi-structured format, all 9 teachers who won the EPE. These interviews had various objectives: to consider thoroughly, teachers' pedagogical means of teaching; to examine closely the information obtained from the documents analysed; and above all, "to gather descriptive data in the subject's own language, allowing the researcher to intuitively develop an idea on how the subjects interpret details of the world around them" (Bogdan & Biklen, 1994, p. 134).

In accordance with the objectives formerly explained, in these interviews we aimed to identify the reasons for; i) the use of b-learning in the practice of teaching; ii) the importance these teachers attribute to this approach and; iii) possible inherent changes in teaching practices with the promotion of educational success in mind. The interviewers also sought the interviewees' views regarding the possibilities and limitations of an on-line milieu in creating learning communities.

The interviews were audio-recorded and then converted to a written transcript. The text from the interviews was imported into and analysed in a qualitative analysis software NVivo8 (QSR International, Doncaster, VIC, Australia) together with the data obtained from other sources.

After the codification of the data, we created interpretation categories through content analysis (Maxwell & Miller, 2008; Quivy & Campenhoudt, 1998; Strauss & Corbin, 1998; Bogdan & Biklen, 1994; Miles & Huberman, 1984; Bardin, 1995), a process that consists of reducing data to formulate inferences.

The content analysis was divided into two dimensions: pedagogical work (PW) and perceptions about b-learning in teaching and learning (BL). On the PW dimension, content analysis allowed us to identify the following categories: "change", "equal opportunities", "description of the pedagogical work", "Bologna Process influence"and "assessment". On the b-learning dimension the categories were as follows: advantages of blended learning, factors that promote success in learning, learning outcomes, the importance of the EPE at the University of Porto and motivation for the b-learning approach.

RESULTS
The findings presented in this paper resulted from the matching of data obtained through the use of document analysis. We wanted to obtain data about the following questions, among others.

What are teachers' motivations for creating b-learning environments in the teaching process?
The increasing use of learning environments is related to a series of external factors, in terms of the global economy, based on knowledge and influenced by technological advancement as well as the lack of state funding by the HEI. In turn, this necessitates the search for other resources that might facilitate interaction between teachers and students. Therefore we decided to study the motivations for teachers' and students' use of *b-learning* at Porto University. The opinions are shown in table 1.

Table 1. Motivation for using *b-learning* at Porto University.

Students	Teachers	Winners of EPE (teachers)
-Possibility of obtaining material; -Characteristics of platforms (space/time flexibility, speed and ease in getting the contents, comfort, constant availability, tools at disposal); - Better advantage of curricular units; - Producing activities within the platform (assignments, tests, communicating with the teacher, interacting with	- A need to update pedagogical methods; - Ease in placing resources at students' disposal; - Enrolment in in-service training; - Prior experience; - Institutional demands; - In line with the Bologna guidelines; - Curiosity; - Challenge; - Increased contact with the students;	- Pedagogical innovation; - Added value of the Web in teaching; - Motivation of the students toward the technologies; - Prior experience; - Curiosity; - In line with the Bologna guidelines; - *Other motivations (i.e. E-learning Prize of Excellence, U. Porto)*

classmates, looking up marks and messages…); -Interaction with the teachers -Other motivations (obligation; curiosity about novelty; spirit of intervention; effort on the part of the teacher; motivation of the teacher and good use of platform, necessity) ; - Personal responsibility.	- Increased motivation and participation of the students	

It may be inferred from the data in table 1 that teachers are motivated to use the b-learning resource for pedagogical reasons and to update and diversify teaching methods, the objectives of the Bologna Process and the demands of contemporary society.

Teachers' efforts in increasing student participation through the use of more attractive resources appear as motivational factors in both teachers' and students' discourse. The latter acknowledge teachers' work as a motivational factor for the use of the platform.

Other motivational factors are mentioned by the students, both intrinsic – i.e. the challenge, the spirit of intervention, personal responsibility and curiosity – and extrinsic – such as "getting better marks".

The teachers were motivated to use b-learning for pedagogical reasons as well as to update and diversify teaching methods, accomplish the objectives of the Bologna Process and meet the demands of contemporary society.

A further motivational factor expressed by teachers concerned the start of a practice that became possible through enrolment in training sessions: the development of tasks that favour the use and integration of technology within the pedagogical dialogue.

As mentioned earlier, we believe that this dialogue has been stimulated in the last few years by the Bologna Process assumptions. Based on data and complemented by theory, reflection on the possible relation between the use of b-learning and the training paradigm pointed out in the Bologna Process is justified. It was with this in mind that this research was developed. Hence, we sought to answer the following question:

What is the relation between b-learning and the learning-teaching paradigm pointed out by the Bologna Process?
The results obtained reveal that teachers who use b-learning to present subject content and other information do not foresee changes in their pedagogical work. On the other hand, some teachers cited changes regarding shared reflections in forums, greater interaction and communication with students, less use of paper, increased opportunity for collaborative work among students, more conceptual and organizational precision, greater student awareness in terms of their scientific progress and more opportunities to support students.

We equally identified in teachers' discourse, indicators of change that incentivise autonomy, cooperation and social integration. These were facilitated, stimulated or made possible through the resource of b-learning.

According to teachers, these changes concern improvement in teaching, namely the development of specific skills. The following statements illustrate this:

"I think nowadays that I teach better from the objectives and I plan subjects better. I think that e-learning helps me develop these skills. Furthermore, I believe that if I didn't use it, I would find it more difficult to effect some of the changes I have made (…)". [d.5]

Some teachers also attributed to b-learning the change from a traditional method of teaching to one that is more active and focused on the students, as articulated in the following statement:

"(…) My breaking away from the traditional method to a more active one has been stimulated by the use of information and computational technology in the subjects that I teach". [d.1]

As previously noted, more attention was given to practical application of subject content and incentives for autonomy and creativity, as well as the contribution of the students in structuring the course. This is illustrated in the following student's statement:

"Whenever possible, I always tried to resolve my uncertainties and those of my colleagues by presenting other solutions to problems, apart from those provided by the teacher and also presenting other technological solutions over and above those used in the curricular unit". [UCP1_refl].

Some of the teachers mentioned that, because of the Bologna Process, they are demanding more collaborative tasks from their students. This causes the students to dedicate less and less time to voluntary, pleasurable or intellectually challenging types of work.

We aimed to answer a further issue.

What are the capabilities and limitations of b-learning in prefiguring learning communities?
The teachers who won the EPE had divergent opinions regarding the possibilities and limitations of b-learning in building learning communities. They mentioned situations in which students interact in groups with the objective of learning that exceeds geographical limitations. The following assertions are examples of this:

(…) It was possible for Portuguese students of nutrition to contact American students and ask questions about fast food. The Americans also wanted to know about the situation in Portugal, the importance of fast food here versus fast food there. (d.2)

"(…)In relation to the learning communities, I have a lot of experience but at a personal level, in my research work, in the development of software work. For 15 years, I worked in this area but it's always been remote work with people and communities that I don't know personally". [d.1]

"(…)We have a person, for example, that is in London and so four or five of us are in an e-group, like those in g-mail and we discuss the data". [d.4.1]

"(…) It's a lot easier to establish contact with a teacher …the computer promotes a certain informality. With the computer it's easier to write one or two points in parentheses and this somehow facilitates the communication". [d.5]

In the statements made by teachers during the interviews, we recognise the importance of the teaching component in stimulating the production of knowledge and, at the same time, developing an environment of sharing and social interaction.

Based on the social, learning and cognitive presence indicators (Garrison & Anderson, 2003) of the Community of Inquiry, we reflected on these "presences" expressed by the teachers who had won the EPE and their students.

As regards the social and cognitive presence, we aimed to establish whether the students had the opportunity to project themselves socially and emotionally through the use of the e-learning environment. Therefore, we asked 73 students from four curricular units which had won the EPE, to classify, according to a 1 to 5 scale – 1 (*not important*) to 5 (*very important*) – the influence of the different elements of the environment in relation to their social and cognitive development: students(S), teachers (T) and the characteristics of the curricular unit (CU).

The data presented [chart 1] was grouped in terms of level of contribution:
1-2: little contribution
3: neither a little nor great contribution
4-5: great contribution
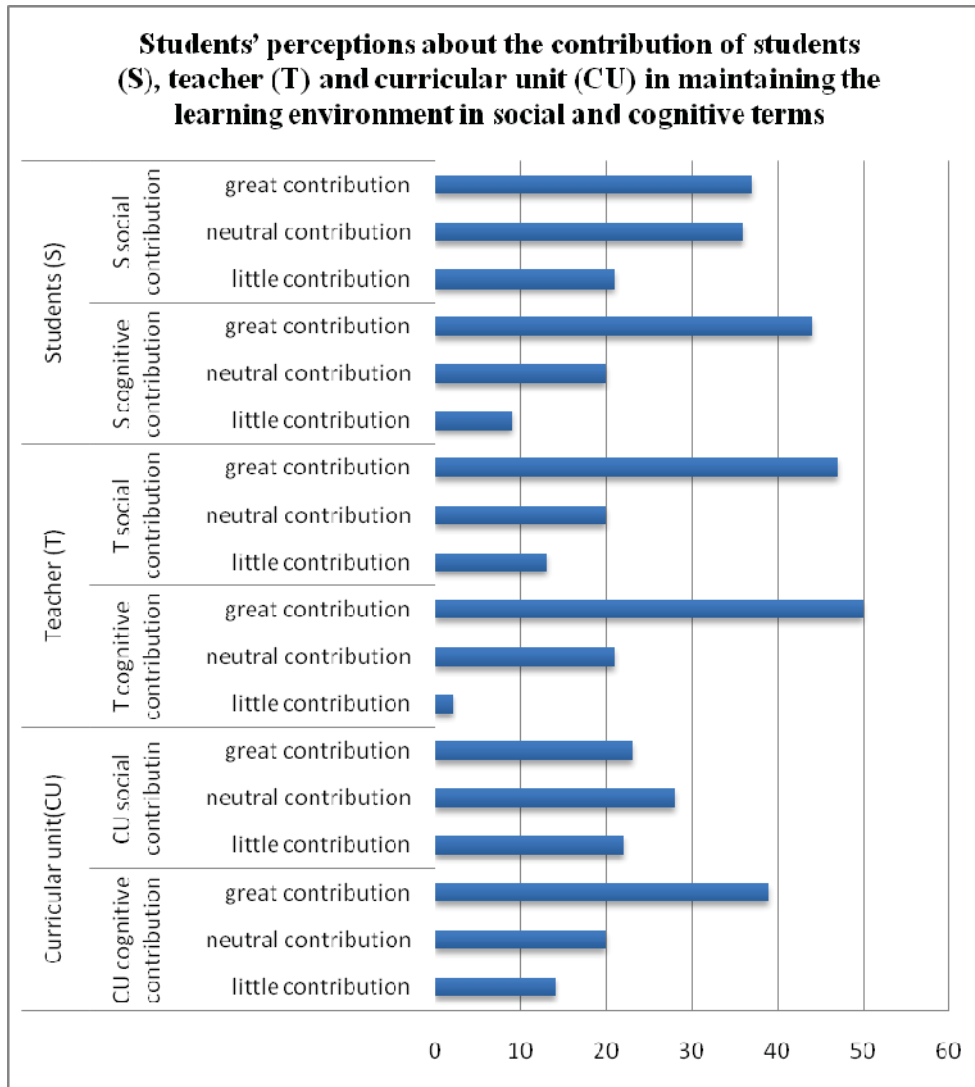
Graph 1. Students' opinions about the contribution of students (S), teacher (T) and curricular unit (CU) in maintaining the learning environment in social and cognitive terms

According to the data presented [graph 1], the students attributed to the teacher the greatest contribution for the maintenance of the learning environment in terms of cognitive and social presence (approximately 70%). The information matches the opinions of students from three out of the four curricular units, who confirmed that the main element of the online component was the teacher.

This data is also in accordance with the assumptions of the constructivist, research communities that attribute special value to teaching presence that is related to the remaining presences. According to the authors, the teacher's presence creates a community of inquiry that includes both cognitive and social presence. These functions are integrative in the sense that teaching presence brings together the cognitive and the social in a purposeful and synergistic ways (Garrison & Anderson, 2003).

These factors emphasise how it is important that all participants are made responsible for the task of learning in a learning community. In the academic case, the teacher is responsible for identifying the relevant knowledge(s), for proposing experiences that lead to critical discourse and reflection and for diagnosing and assessing the learning results, noting that e-learning demands greater attention to the balance between control and responsibility (Garrison & Anderson, 2003).

Moreover, we can infer from the same data that the students considered their main contribution to the learning environment to be cognitive. This means their response to challenges, the proposal of new topics and grounded contributions for discussion.

In spite of the fact that the majority of students consider that there is a sizeable contribution in the curricular unit as a whole in social and cognitive terms, it is to be noted that for the interviewees there is greater presence of the learning environment cognitive aspects.

In relation to teacher control and shared responsibility, we sought the opinions of students about the assertion that they contributed themselves to diverse aspects of organization and curricular development [graph 2].
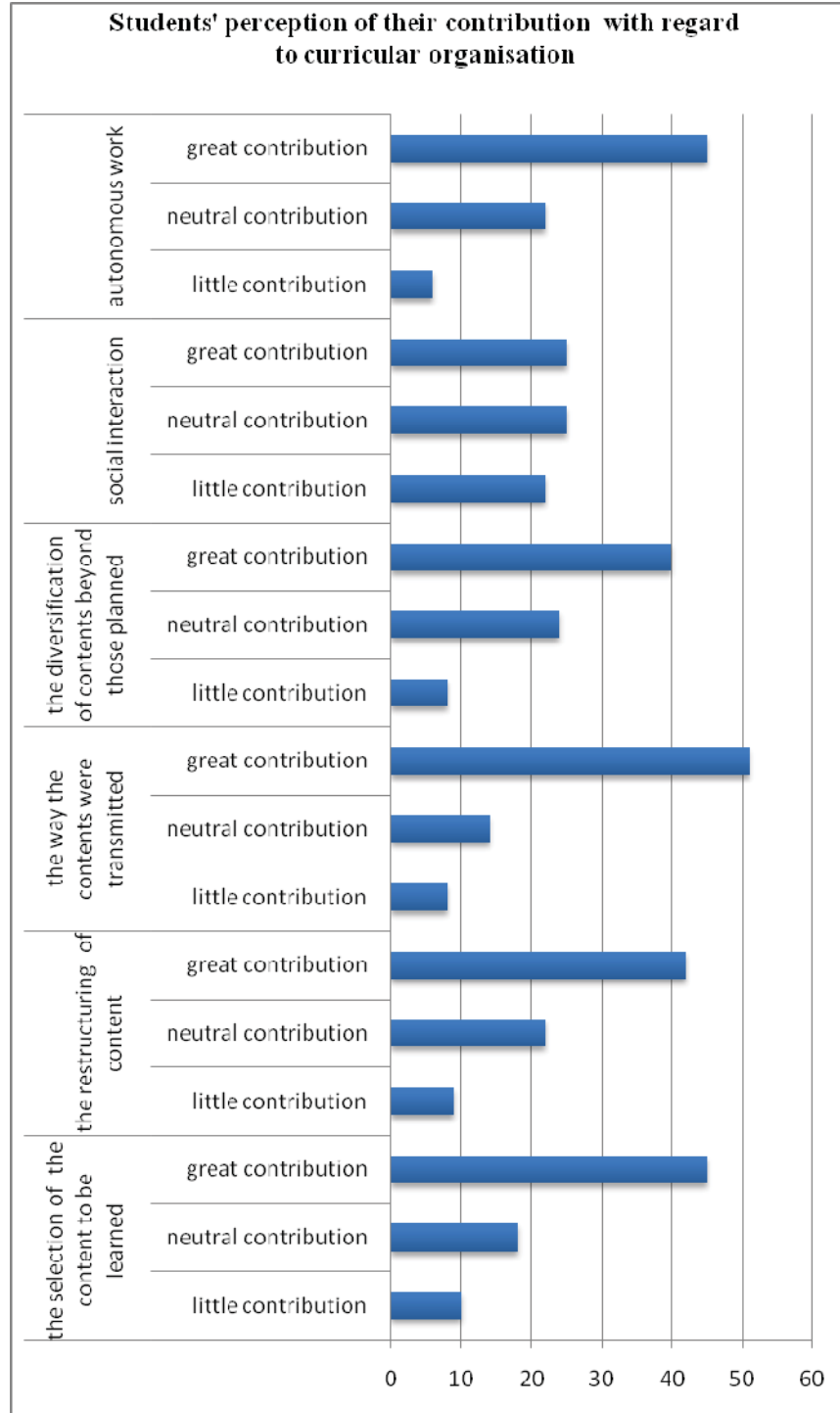
Graph 2. Students' perception of their contribution with regard to curricular organisation

The responses reveal that the students in general give considerable importance to their contribution to curricular organisation and, more specifically: to the ways in which content is transmitted (73% of 73 responses consider "great contribution"); the stimulus toward autonomous work (67% consider "great contribution"); the selection of content material (64% consider "great contribution"); the restructuring of content (61% consider "great contribution") and the diversification of content, additional to those already planned (58% consider "great contribution"). Social interaction was the item that students perceived as the one they contributed leastto.

QUALITY OF BLENDED LEARNING

The results, based on the theoretical and empirical framework, led us to illustrate the following scheme which relates the pedagogical, economic and social aspects involved in the b-learning approach within the scope of the Bologna Process [figure 1].
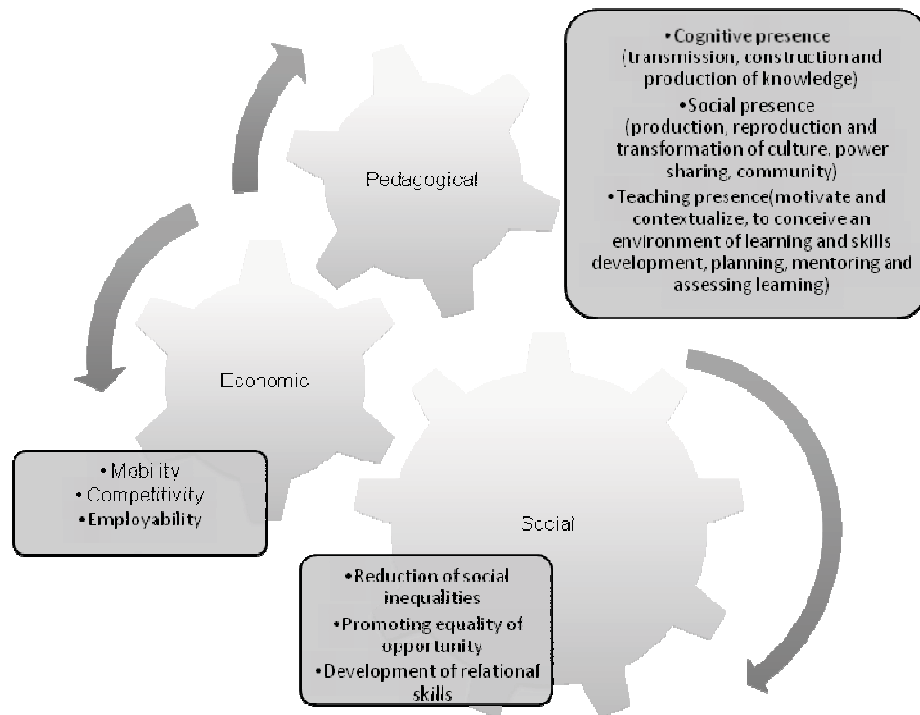

Figure 1. B-learning approach within the scope of the Bologna Process

The discourse of the majority of the interviewed teachers suggests that the factors limiting the learning communities' configuration may be related to the education institution, the learning environment, the teaching body or the students themselves.

As regards to the educational institution, such factors often result from demands from administrative tasks as well as the subdivision of courses, which leads to an increasing number of students (a factor that depends on the precariousness of funding in higher education). The financial devaluation and lack of relevance given to the resource of the learning environment in terms of career progression, together with the resulting increase of work, generate a dichotomy. On one hand, universities offer technological means through the LMS platform and, on the other, the motivation and time needed to devote to a continuing training process—which is required by the use of the resources—is reduced according to some teachers.

Furthermore, the lack of coordination between attendance and online presence, technical failures that can occur and disorganisation of content or an excess of concurrent activities can generate great demotivation or feelings of frustration and incapability in students.

CONCLUSIONS

The discourse of the majority of the interviewed teachers (those who had won the EPE) highlighted the possibilities of b-learning in the complex and multi-faceted higher education setting.

There were various reasons why teachers adopted a b-learning approach. However, this choice was related to pedagogical innovation, updating and diversifying teaching methods, Bologna Process purposes and contemporary demands from society.

The paradigm change brought about by the Bologna Process, a central matter dealt with in this text, can be facilitated and promoted by the b-learning approach.

The interviewed students gave great importance to their own contribution in curricular organisation and, more specifically: to the ways in which content is transmitted, the stimulus toward autonomous work, the selection of content material, the restructuring of content and the diversification of content, additional to those already planned. They also attributed to the teacher the greatest contribution for the maintenance of the learning environment in terms of cognitive and social presence.

Characteristics that have an impact on pedagogical/didactic issues include the need to transmit and to re-contextualise knowledge(s), taking the starting point of different cultures (Leite, 2002). In addition, the urgency of cognitive development and diverse forms of knowledge building; the capacity to adapt to new contexts and realities; the development of creativity, autonomy, flexibility and critical thought through the instigation of research; and the resulting capacity to mobilise skills to solve real problems are all factors that relate to the desired change in the higher education paradigm (Carr & Chambers, 2006; Vieira, 2007).

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