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Subjects in the blended learning model design. Theoretical-methodological elements

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Abstract

Curriculum design at different levels explains the intentions of an educational project in its particular context. The subjects design is specified in micro planning, and orients didactics around the questions of the teaching and learning process in the classroom. This research was conducted in order to determine theoretical-methodological elements for the design of courses following the blended learning model. As point of departure, two questions were considered: How others do it? And what do we count on to be able to perform subjects based on this model?

The method used was based on the case study, from a hermeneutic-phenomenological approach. Quantitative and qualitative techniques were also used such as surveys, interviews, and documentary analysis. Results are specified in a proposal that integrates three dimensions: intentions and principles, scope and development, and assessment.

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Keywords: Curricular subjects design, blended learning, university education, curricular flexibility, ICT in training programs, case study

1. Introduction

Subjects design is a teacher´s task, following Bernal´s proposal (2006:8), it comprises the following elements: "context - students, institution, courses, and competences; objectives and skills; contents; methodology - activities, resources, space-, and assessment."

The above components can be classified as operational and conceptual units. According to Escudero, Area, Bolivar, Gonzalez, Guarro, Moreno & Santana (1999) and Moreira (2009), those components are reflected in the entire training project. Thus, the models which incorporate ICT by themselves are not learning motivating. In that sense, the blended

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learning model that consists on a mixture of face-to- face sessions and online ones, and the active and participatory processes contribute to the change and innovation; hence, the importance of a coherent and complete planning as the result of theoretical and practical principles that orients teaching.

Along these line, there are diverse studies in university contexts oriented toward pedagogical knowledge and dynamics in virtual environments and blended learning, as well as the challenges involving teachers and students. Among the works, the following have been noted down: Bartolomé (2008), Ferreres (2011), and Gonzalez & Ospina (2013).

The objective of this research is to identify and analyze didactic-organizational elements that underlie the blended learning courses practice, together with the material conditions and teachers, students' and authorities' perspectives, in the context of the Faculty of Social Sciences of the Universidad Nacional de Costa Rica, which allows to determine theoretical-methodological elements for the design of semi face-to- face blended learning courses.

2. Material and method

This case study was carried out based on a hermeneutic-phenomenon conception in order to explore and to analyze the participants 'conditions, procedures, and subjectivities in their own socio-educational reality with a practical purpose and possibilities of generating ideographic interpretations. Qualitative methods are emphasized together with quantitative techniques, starting from a case study taxonomy, descriptive and explanatory: Colás & Buendia (1994), Latorre Del Rincón & Arnal (1996), and Perez (2004).

The object of study is formed by blended learning degree, at public universities, prior to the offer analysis and the scope of the researcher's team, the sample was selected as described in table 1.

Table 1. Informants by research stages

I Phase: Analysis of experiences in blended degrees (1)	
Qualification (assigned code)	Area of Knowledge
Cases in Spain: C-01-1, C-02-1, C-03-1, C-04-1, C-05-1 (2)	Business Studies, Anthropology and Human Evolution, Information and Documentation
Cases in Costa Rica: C-06-1 (3)	Pedagogy
II Phase: Material conditions diagnosis and teachers´ perspectives, students and authorities.	
C-01D Faculty of Social Sciences of the Universidad de Costa Rica (4)	Social Sciences

Notes: (1) All qualifications are regulated by responsible bodies for the management of the University quality in the respective contexts; (2) Mayor coordinators; (3) Administrative authorities, teachers, students; (4) Deanship authorities School principals, teachers and students.

Structured interviews, surveys, and documentary review were carried out, through data matrix instruments, interview guides, and questionnaires, truly validated by judgement of experts and application to study units, according to rigorous scientific criteria. According to such criteria, the quantitative aspects gathered in the survey were calculated with the Cronbach's coefficient alpha resulting these values: 0.714 for students and 0.719 for teachers. This level of reliability fits within the range of consistent good quality according to related studies. The data collection and systematization was made through electronic systems, quantitative data using spreadsheet functions, frequencies and percentages, opinions with Atlas TI to establish semantic networks, coding and conceptualization, among other primary documents that enable to determine the structural categories.

3. Results

Results were organized according to the process carried out in two stages. In the first one, the practice underlying the implementation of blended learning model experiences was observed. In the second, contextual conditions and teachers, students and authorities´ perspectives were described and analyzed with the possibility of designing courses using his model.

3.1. How do others do?

The analysis of experiences in blended learning degrees is a task that provides a vision on how others do to take ideas and consider ours, as Calés recommends (2016:60`) "...there is a very key thing, we are at a moment where the wheel should not be reinvented, it is important to see what others have done and they have done well". Based on interviews carried out to qualified coordinators, the significant factors for the purposes of this study are described.

Six experiences of blended learning courses are located in public universities, therefore, they are regulated by national entities in terms of quality accreditation, budget, and management. They are all prestigious universities in their context and have infrastructure conditions and materials (classrooms, auditoriums, computer and language laboratories, languages, libraries, offices, etc.) and technological resources (web services, virtual platform, online teaching resources, etc.) suitable to meet face-to-face and blended-learning students.

Blended learning has been an Innovation Centre proposal, supported by the University authorities, who have set policies in this regard. In all cases, it has been a strategy of increasing tuition and provide quality training to people who for several reasons cannot opt for face-to-face education. Such is the case of teachers and professionals in service, people who live in areas far from the University campus or other obligations preventing them from attending regular full-time courses. The age of pupils differs in all cases; the majority is older than 30.

One of the reasons why in these degrees they have chosen the virtual-face to face combination, comes from the need to motivate the student to carry out various tasks in personal contact with other students and the teacher, and thus allow them to learn to coexist with others in the campus environment and their academic culture. The educational organization that is implied from the six experiences, is pointed out in the following factors:

1. The combination of face-to-face classes or virtual activities with classes or face to face seminars are outlined in table 2.

Table 2. Distribution of face to face classes-virtual classes

Case	Distribution
C-01-1	There are not face to face lessons. Only for exams
C-02-1	Saturdays, 2 hours each subject
C-03-1	12 face to face hours per course (they are trying them to be 18)
C-04-1	Voluntary attendance
C-05-1	Face to face lessons of 1 hour each, every 15 days (on Fridays)
C-06-1	50% Face to face lessons and 50% virtual lessons (approximately, each subject does curricular adaptations)

2. Moodle platform as virtual learning environment.
3. Tools used in the learning activities: forums, videoconferencing, chats, messaging, calendar and others from the virtual classroom. In addition, they use the ones with free access: google drive, blogs, web pages and a series of open resources.
4. Face to face exams in all cases.
5. The Teaching and learning techniques mostly used are: case studies, double entry journal, readings, essays, questionnaires, projects, collaborative work, practices, and self-assessment exercises.
6. The student has all the material in the virtual classroom, such as: subject program, teaching guide, activities calendar, content or themes made specifically for the subject, practical presentations with schemes in each subject, support, links to online resources, materials, and self-assessment. In some cases, the videoconference or face-to-face lessons are broadcasted live or recorded and then, they upload them to the virtual classroom.
7. Tutoring is permanent, but in some cases it is scheduled; however, the watchword is efficiency and punctuality, so that the student is not delayed in the process. It is done by internal means or virtual tools such as messaging, forum questions, by phone, email, social networks, WhatsApp, etc.

The way to work that qualified coordinators point out is based on interdisciplinarity and support from central authorities, the different academic committees, and the administration, as a common project, which is evidence of the importance that the student has and the way they are organized to facilitate learning.

The teacher is free to contribute creatively, although there are some rules to standardize some specific criteria such as tutorial, the structure of the virtual classroom, examinations, etc. Therefore, the institutions have got training programs in educational and technological aspects so the teacher a assume blended courses the best way. In terms of the academic load, in six cases, a blended learning course is equivalent to a face-to-face one; some coordinators state that more effort is necessary, especially in the initial planning and ongoing couching; however, the teachers' availability has been essential in this proposal of innovation before the limited economic resources.

Projections and perception of this modality in the future, leads towards quality improvement and reinforcement of the virtual and face to face teaching, socialization as well as giving students educational options to feel free and adopt them to their needs.

3.2. What do we have to be able to undertake proposed blended learning?

In this second phase, the teachers, students, and authorities' perspectives were analyzed, as well as the institutional regulations and procedures were reviewed, in the context where the blended learning model is intended to be implemented. As a starting point, the category system was worked out: institutional strategies in educational innovation, use and availability of technological resources; learnings, administrative and technical support and trends and advantages of that model.

It has been 10 years since the university started the bonding process with other universities on the subject of virtuality and blended learning. Since 2006, the platform Moodle was adopted as a virtual learning space, which is promoted in all faculties in order to incorporate new teaching models. For that reason, there are trained teachers in the use of Moodle tools and in teaching management in courses where the virtual classroom is used.

Teachers and students noted down that they use and have technological resources for teaching, communication, entertainment, updating, personal tasks, training, and information. The technological resources mostly used are: computer and connection to internet, web 2.0 tools, mobile technologies, programs and specialized applications, social networks, specialized magazines subscribed databases, e-books, etc., as it is shown in table 3.

Table 3. Use frequency of technological resources (1)

	Students			Teachers		
	Media	Standard deviation	Variance	Media	Standard deviation	Variance
E-mails	4,738	0,57524	0,331	4,851	0,42788	0,183
Forums-chat-wikis	2,775	1,28462	1,65	4,851	0,42788	0,183
Mobile-SM	4,095	1,17915	1,39	4,554	0,81328	0,661
Mobile-WhatsApp	4,631	0,82434	0,68	4,095	1,08752	1,183
Mobile-internet	3,995	1,17572	1,382	3,932	1,10207	1,215
Resources on line	3,719	1,15964	1,345	3,96	0,95715	0,916
You tube-music...	3,853	1,12372	1,263	4,068	0,91159	0,831
E- books and e-journals	3,496	1,20482	1,452	3,757	1,1445	1,31
Encyclopedia on-line	2,269	1,20499	1,452	4,054	0,97772	0,956
Web search	3,731	1,20702	1,457	4,081	1,336	
Social networks	3,628	1,39985	1,96	3,689	1,16954	1,368
Tutorials	3,012	1,33664	1,787	4,351	0,95706	0,916
Service payments	2,936	1,5627	2,442	3,77	1,1651	1,357

Notes: (1) N=409 students, 74 teachers

According to teachers and students, the teaching and learning strategies they mainly use are analysis, exhibition, discussion, case studies, discovery and problem solving, practical exercises, readings, oral presentations, concept maps and summaries. For the assessment, directive evaluation prevails and in some cases they are complemented with self-

assessment and peer-evaluation. They combine written tests with presentations, group projects, essays, and practical exercises.

Institutional improvement plan has worked on issues of curricular flexibility, virtuality, and bimodality, areas in which there are some successful initiatives. However, it is still an incipient topic. According to the teachers and students, higher education tendency is to incorporate ICT in the processes, the educational organisation focused on the student´s skills, as well as participatory activities and Teleworking.

There is teachers and students´ availability to carry out blended courses, since they refer to them as a trend that enables the development of responsibility, criticality, teamwork, and the student's autonomy, while one can innovate and take advantage of technological and informational resources. To put into practice bimodal courses, the following organizational changes are suggested: a) administrative support, quality and access to students, as well as strategic decisions for their own support in the managements of each discipline; b) technical support for design and resources, platform management, as well as the improvement of the Internet's coverage on campus; c) pedagogical management for the assessment of aspects such as availability and time management, curricula adaptation, new forms of assessment, contents and activities planning.

Among the advantages that blended education might have, teachers and students point out the following: the flexibility to manage time and student´s own pace, technological resources management, writing skills and collaborative work on computer networks, personal and social skills. On the other side, teachers develop didactic skills for the classroom improvement by combining both environments that are complemented with the management of up-to-date information, which requires a greater commitment from the teacher´s role and the guide tutor of the process, although they state that there will be greater demand from teachers.

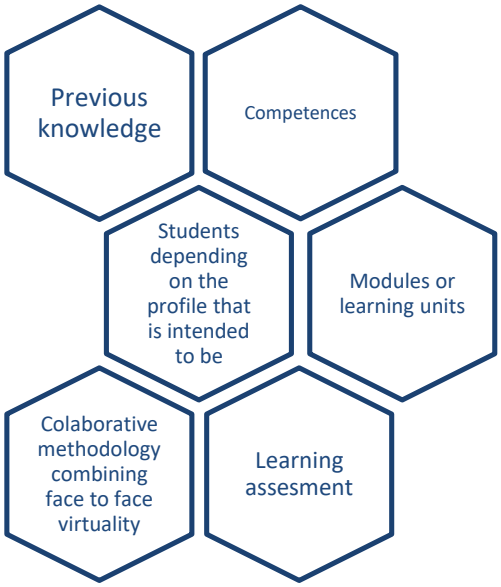

Figure 1 Basic didactic organization of the subject blended learning

3.3. Emerging didactic principles in the blended learning model

From the experiences of these blended courses, the basic educational process that a subject implies is summarized, as illustrated in Figure 1. Each component looks like a cell, whose metaphor of honeycomb explains each cell in a functional structure unit, so that these vital activity is the result of all in coordination.

Other cells that enrich the dynamics are added to that cell structure. Among them: the quality accreditation, the training needs as emerging majors, the culture Centre, the changes required in the context in terms of new forms of interdisciplinary work to provide better results, academic freedom, budgetary constraints, competition with private universities, new competencies and skills in the use of technological tools, the learning styles of students, etc.

The elements contributing to the theoretical and methodological basis for the blended courses design, according to the analysis of the experiences and the context of the case study conditions, are contrasted with the theory in the chart of table 4.

Table 4. Theoretical-methodological elements for the design of blended courses blended learning

Identified within the company	Constrast theory	References
Institutional strategy, structures, approaches of support and adoption	Political-organizational strategies for the different implementation phases; new educational models, new changes in the organizational and academic fields of action. The quality of training programs.	Llorente (2008), Porter, Graham, Spring, & Welch (2014) and (Gómez, 2015-2016)
Basic elements of subjects design Didactic organization of a blended learning course	Context, objectives, contents, methodology, assessment. Previous knowledge, skills, modules or learning units, participatory methodology, assessment,	Escribano (2004), Bernal (2006), Galán (2009), Gutiérrez (2011), López, Pérez & Rodríguez (2013) and España (2014)
Technological tools	Moodle and different tools to boost learning activities: chat, discussion forums, etc.; Innovation with the use of ICT in teaching and learning development in higher education.	Imbernón, Silva & Guzmán (2011), Maldonado (2012) and Morales-López (2014)
Face to face lessons combined with virtual ones	The face to face-virtual complement, reciprocal relationship for skill development; experiences basis, speeches, discussion, analysis, reflection, perceptions (individual - guide Professor); the influence of previous knowledge and class attendance are significant for the performance.	Garrison & Vaughan (2011) y López, Pérez & Rodríguez (2013)
Attitudes and pupils´ availability	Flexibility (timing, frequency, sequence, intentionality and alternation of interactions); the willingness and desire to learn and to be available to teach.	Martín & Sánchez (2013)
Teaching skills	Challenges for the teaching and learning strategies, active figure in the student's university learning. Teachers´ attitudes, methodological strategies in network, resources selection, use of virtual platform, etc.	González & Ospina (2013), España (2014) and Martín, Hernández &
Learning assessment and development of the ability to learn	The assessment process; technology contributes to boost the ability to learn not to memorize for a written test.	Graham (2016)

Those basic factors in a project of training blended learning is integrated in three dimensions of the educational context: institutional intentions and principles, scope and development in didactic and pedagogical processes, and evaluation as part of the process and improvement of the educational quality.

4. Conclusions

A subject design is a teaching task involving consultation of the different curricular instruments; therefore, horizontal didactic structure of the course has changed to a comprehensive working scheme. From the blended learning model, looking at institutional strategies, educational approaches and policies, organizational culture and center goals, are lines in permanent construction that materialize the micro design: previous knowledge, competences or objectives, modules or units of learning participatory methodologies that combine virtual-face to face and learning assessment. This exploratory study allowed to generate future lines of research that require deepening experimentally in

blended-learning university courses in the context of study, so that enable the analysis of the incidences in the learning and skills development and in organizational management.

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