Valuation in credits of a virtual course

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The allocation of credits to a virtual course often appears like a task difficult to value, since frequently diverse processes of learning by the student are involved. The development of the specific didactics in a virtual way form of the Certificate of Pedagogical Attitude at the Extremadure University has served to make a valuation of the real time that the students uses in completing a virtual course through the Internet. In order to consider the relation between contents and time used by the students the data of a questionnaire at the end of the course has been used. A relation between the volume of information (Kbytes) of HTML files (without taking in account images) of each one of the chapters and the time used on them that the students expressed in the inquiry has settled down. One narrow relation between volume of information that has been obtained (Kb of files HTML for each chapter) and time considered by the students in its study, the value average has been of 48.9 Kb/hour. As an orientative value of 1 hour by each 50 Kb of HTML files is proposed in the calculation of credits for a virtual course, nevertheless it is necessary to consider that the total estimation must include in addition other concepts.

Keywords: e-learning, credits.

1. Introduction

The virtual learning inherits from the standard one a great amount of concepts and parameters. The organization of teaching and the certification of courses force to assign to each course a temporary parameter that serves in addition to compare it with others. In the case of standard teaching the time used in making a course is restricted normally to entering the number of hours that the teaching staff and the pupils share in a certain task (theoretical explanation, practical exercises, activities etc.) although really the time that pupils need for the real learning would imply the hours that they have dedicated to personal study, concept that gathers the present European Credit Transfer System (ECTS). Nevertheless on teaching and virtual learning the valuation is based on a comparative estimation fundamentally on the attainment of the objectives, reason why, as a rule, to equal raised objectives a virtual course would have the same temporary allocation (credits) that the standard one [1]. Nevertheless this criterion does not consider the contents of the virtual course nor the followed methodology; the valuation of these aspects is complex and full of difficulties, since it necessarily implies an analysis divided equally from numerous variables.

The course for the obtaining of the Certificate of Pedagogical Aptitude (CAP) must, as an objective, enable to the titleholders for the exercise of Secondary Education (OM of the 14 of 1971 July), although is raised its substitution by the Title of Didactic Specialization as of year 2007 (to the delay of imminent the new statutory law of education). The complete course includes 300 hours standard and virtual, and it is divided into three phases, the psichopedagogic where the curricular structure of the Secondary Education, psichopedagogic, curricular and didactic principles and main lines and strategies for the development the tutorial function and attention to the diversity is treated; a phase of didactic specific where they occur to know the curricular components related to the corresponding specialty and the strategies and specific didactic resources of each area; and a phase of practices that try to give knowledge of the opera-

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tion of an institute of secondary education and the department of the corresponding specialty, to develop practical educational activities and to elaborate one memory.

The temporary distribution for each phase is 100 hours of the psichopedagogic phase (70 in classroom), 50 hours of the phase of didactic specific (30 in classroom) and 150 of the practices phase. In the University of Extremadure (UEx) the psichopedagogic phase and the phase of corresponding to the specialties of the area of Biology and Geology can be attended of virtual form specific didactic. Virtual teaching of didactic specific of the specialties of the area of Biology and the Geology of the CAP of the UEx has been distributed in courses 2002-2003, 2003-2004 and 2004-2005. Any type of teaching, standard or virtual, needs the allocation credits, or its equivalent one in hours, for its administrative calculation and its temporary organization. Estimation by the administration or the teaching staff is made generally, but often what happens is that the real time that the students have dedicated to the course differs from what is considered by the teaching staff or the administration.

The present work tries to make a valuation of the estimation of the credits assigned to a virtual course based on the volume of the contents that are provided to the students to them, who through a questionnaire will provide the time which they have used in the consultation. One has tried therefore to make a proposal that relates the volume of information that in time will provide a virtual course employee in its consultation.

2. Material and Methods

The data collected in this didactic work correspond to virtual teaching of specific of the specialties of the area of Biology and the Geology of the course for the Certificate of Pedagogical Aptitude of the University of Extremadure of course 2004-2005 (1st edition). The course was carried out during the month of December of 2004, using the virtual platform WebCT Edition Campus Version 4.0. The implied teaching staff corresponds to the authors of this study, doctors of Biology.

A total of 59 students made the inscription in the virtual course, although two of them did not get to accede to the same one. The studies of the students were distributed in 9 types (Environmental Biology 41.6%, Sciences 18.8%, Veterinary 10.5%, Pharmacy 10.5%, Chemical Engineering 6.3%, Medicine 4.2%, Agricultural Engineering 4.2% and Enology 2.1%); by sex 2/3 were women and 1/3 were men; by ages; in relation to the age the spectrum oscillated between 1955 and 1981 as year of birth, more of 50% they were born between 1978 and 1981, the age average was of 27 years.

The virtual course included the following virtual tools of communication: unique forum, electronic mail of the course, chatroom, in addition to telephone tutorship. As organization tools included a page with instructions, a video of presentation, a calendar of activities, a page of qualifications and an organizational map. As evaluation tools there were a set of 7 exercises of auto-evaluation of 10 test-questions and an activity or task where each student had to give a text file. At the end of the course a standard written examination for all the students was also included.

The contents of the course were separated into 7 blocks or chapters: organization of the area of Sciences of the Nature, curricular design, minimum contents of curriculum according to complete national legislation and curriculum according to the autonomic norms, methodology, didactic practices of laboratory, resources and evaluation. The information was fundamentally textual and in some cases additional images were accompanied, it was organized into HTML files of reduced extension, connected sequentially and in some cases with emergent windows of complementary information also in HTML format.

The course lasted 15 days (without counting the day of the examination), with two sessions of chat of 90 minutes separated into 5 days, and when finalizing a standard written examination was done. Neverthe-

less it was allowed that the students would continue connected to accede to the contents and power to make the second call of the examination (made approximately a month later).

The day of the standard written examination a questionnaire was made out to the students asking them for an estimation of the time need to carry out the course of global form and also separating the time used in the study of each one of the chapters. Also it was requested to them that they indicate the time which they had dedicated to other activities like search of resources in the network to undertake activities, the participation in the forum, mail of the course and chats and the accomplishment of the examinations.

The size in Kb of the information offered in the course has been accounted and it has calculated the Pearson correlation between the size of the information in Kb contained in each one of the chapter of the course and the time considered by the students who have took part in the consultation and studied these contents.

3. Results

The access of the students to the course was distributed in the time of an initially exponential form (Fig. 1). On the second day 52.5% of the students had already acceded, on the fourth day 69.5%, a percentage that was soon to change on the 9th and 10th day where there was an increase from 78.0% to 96,6%.

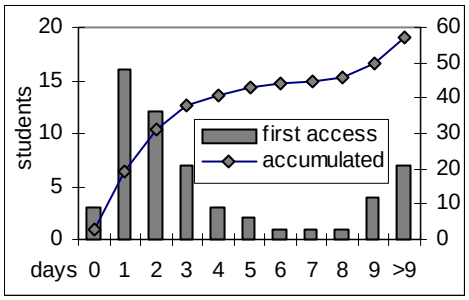

Fig 1. Distributoion of the first access of the students in the time.

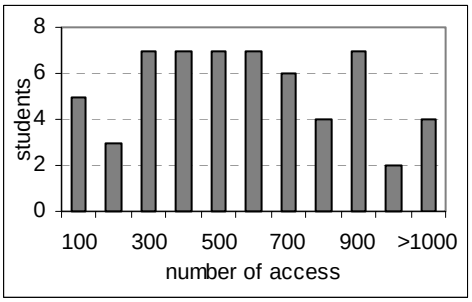

Fig 2. Distribution of the number of accesses to the pages of the course.

The students had access to 246 documents or files HTML, although the virtual platform does not count the documents that appear in emergent windows (51), the total of accesses or to each one of HTML files was 15194, which makes an average of 267 accesses by student, its distribution is very regular (Fig. 2), only 4 students surpassed the 1000 accesses and 5 students did not arrive at the 100 accesses. The acceded page more or less has a total of 343 accesses and one of 23. Only 5 pages have more than 200 accesses and 41 pages have more than 100 accesses.

In the forum appeared a total of 472 messages, although almost half (222) corresponded to the teaching staff. The messages were trims fundamentally in the election of the activity that was due to make to surpass the course. The distribution of the reading of the messages follows a model sigmoidal (Fig. 3), only 9 students surpassed the value of 400 read messages, 25 students did not get to read 100 messages.

The distribution of archives or HTML files in each one of the subjects or chapters of the course appear in Table 1, where also the total size of these archives is indicated. The average of the size by file or 3.967 files was of Kb.

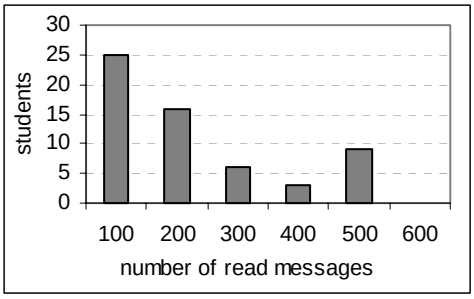

Fig 3. Distribution of the number of messages of the forum read by the students.

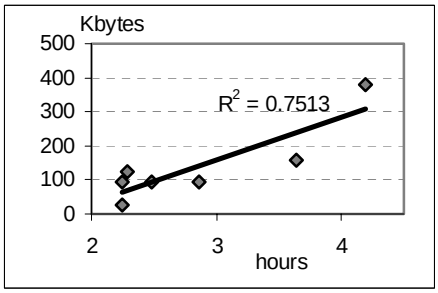

Fig 4, Relation for the chapters of the course of its size in Kb and the time in hours considered by the students in its consultation and study.

Table 1. Distribution of the number of HTML files for each one of the chapters of the course and total size in Kb that occupy these archives and the time used by the students for each one of the chapters of the virtual course.

Chapter	HTML files	Kb	1-2 h	2-5 h	5-10 h	Mean hours
1 Organization	13	94.8	26	15	2	2.48
2 Curricular design	50	158.0	11	25	7	3.64
3 Curriculum	116	381.0	7	25	11	4.20
4 Methodology	17	94.3	14	27	1	2.86
5 Practices	18	125.0	28	14	1	2.29
6 Resources	21	94.8	29	13	1	2.24
7 Evaluation	11	28.0	29	13	1	2.24
Total	**246**	**975.9**			**Mean**	**19.95**

In each file or HTML file in addition to the text appeared instructions of format HTML which made an estimation of the number of words by file, for his calculation is taking from each chapter the greater file and the minor and telling the number of words, since it leaves from the total of Kb by file does not correspond to the text, but to instructions HTML, reason why in the smaller files the relation between the number of words and the size of file is minor who in the great files. The calculated average has been of 82.4 words by Kb (standard deviation of 44.6)

Table 2. Distribution of the number of students based on the hours considered for the entire virtual course by the students who complimented the questionnaire.

Total hours of the course	Frequency	Average	Total hours
1-5 h	0	2.5	0.0
5-10 h	3	7.5	22.5
10-15 h	10	12.5	125.0
15-20 h	6	17.5	105.0
20-25 h	6	22.5	135.0
25-30 h	16	27.5	440.0
		Total average	**10.73**

The evaluation survey included one first question so that the student made estimation global of the time that has taken the complete course to him including all the activities. The results, separated by frequencies, appear in Table 2. According to this first question to the students the used average time for the entire course was of 10.7 hours

Also it was asked to the students in the questionnaire to estimate the time used separating each one of the chapters of the course. The results appear in Table 1. In this case average value for the total of the chapters it was of 19.95 hours. Dividing the total of information in Kb (Table 1) by this average of time a value of 48.9 is obtained Kb/hour as estimation. The correlation between the time considered of consultation and study of each one of the chapters of the course and the size in Kb of the contents of each one of them offers a positive value (0.867) and a signification to level 0.05 (bilateral). The regression line appears in Fig 4

4. Discussion

Virtual learning implies an important responsibility of the students, who must organize themselves and regularly follow the course without the implicit planning in a standard course [2]. Given to the age average of the student and the duration of the course we can conclude that the interest of the pupils to accede for the first time to the course has been high, more than half of the students acceded to the second day of the course and 80% to the 8 days.

One assumes that the consultation of the contents of a virtual course is necessary to surpass it; nevertheless the data indicate that a good part of the students had not acceded to all the contents (Fig 2). This data could give rise to investigate if a selection exists and on the basis of what it becomes, a possible explanation could be related to which it is asked to them in the auto-evaluation exercises. In order to be able to affirm this hypothesis a detailed study would be necessary to analyse the access to the contents that are demanded by these questions. It is our intention to continue investigating this subject. Also it is evident that a good part of the student do not read all the messages of the forum, this can be explained since the majority make reference to the election of the work that they must develop and do not affect the work of the other students (Fig 3).

An important difference between the estimation of the time has been observed that used the students in developing the course when it is asked to them of a global way or of detailed form. It would be possible to be thought that in the calculation their exists an underestimation when doing of global form and/or an overestimation when doing it in detailed form. The strong existing correlation between the volume of information and the estimation of the used time when it is done separating each one of the subjects or chapters makes us think that this estimation is much more trustworthy. Although the virtual platform provides the access time of form detailed for each one of the pages cannot be differentiated if this time includes its reading or has been only printed to read it on paper.

The valuation in hours or credits of a virtual course has to consider many aspects. Centering to us only in the contents and having obtained an average of volume information in Kb in relation to 48.9 the considered time of Kb/hour, sets out that the one of 1 hour by each 50 Kb of HTML files is used as orientative value in the calculation of credits for a virtual course, understanding that this value is only applied to the volume of information that is provided to them the students, in this format and only represents a part of the total time that would be entered since they would lack numerous aspects related to the learning.

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