

## A SYSTEM FOR CONTROL OF USE OF DIDACTIC MATERIAL AT THE DISTANCE

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### ABSTRACT

The increases checked in the processing capacity and in the power of communication of the nets they allow to propose didactic systems with the integration of new technologies to the education, such as audio and video.

Today, it can observe an expressive increase of digital information published through the Internet. This research emphasizes the use of the computer and of the Internet as parts of the teaching atmosphere at the distance. The implemented system allows to establish (i) measures of control of use of the available didactic material in the Internet, as well as the application of (ii) evaluation techniques for, finally, (iii) to specify concrete approaches to compose the evaluation process of the learning at the distance. For so much, it was projected and implemented a software for this atmosphere type with the objective of checking that the ideas proposals are viable.

A direct consequence of the use of this atmosphere type is the need of a larger training so much of teachers as of students, for demanding a change of the habitual teaching-learning process, such as (i) the operation of the atmosphere of computerized teaching, (ii) the softwares involved for sailing and responsibility, (iii) notions of nets of computers and (iv) the introduction of evaluation approaches in the system.

### 1 INTRODUCTION

A lot of considerations should be made so that there is possibility of implantation of this " educational " method, such as: the appropriate and attractive format of the didactic material to be published; its use (with relationship the interface); the accompaniment of the use of this material; the control about the activities be she exercised by the students; the evaluation of the reached learning; the physical structure to assist in a satisfactory way its implantation and, mainly, its use.

Still, considering that one of the great advantages of the use of the teaching at the distance is to personalize the own teaching of a same content in different speeds, of agreement the capacity of the students' learning, and that to establish a control form he becomes a facilitative element in the definition of the teaching strategies to offer these contents different to the students, its different second and respective objectives, with views to look for the most efficient and more productive work, this work comes to contribute in a quite significant way for this proposition.

### 2 PROPOSAL OF THE SYSTEM

To have the student's control in this teaching process at the distance is quite important, once it contributes to the individual learning [1] [2]. Some factors stand out in what he/she refers to personalize this process, as the (i) several existent sailing processes [3], the (ii) specific objectives that each class possesses and the (iii) interests that each one has with relationship to the provided content. The student's of the objectives escape proposed by the course, that usually happens in function of the new interface or simply for the atmosphere of differentiated teaching, it is minimized through this efficient control, confirming the success of this process.

As well as the traditional teaching, this individual, personalized attendance, he/she can make the necessary difference in the search of the best learning, resulting in the improvement of the teaching.

Like this being, the measures of use control are fundamental for the proposition of a model of evaluation of the learning in this it sets of teaching at the distance. Such examples as the statistics accomplished on the traveled nodes of the didactic material, the sequence of nodes (links) traveled (effective sailing) [3], the time of permanence in each node (page HTML) and the not visited nodes, referring to the appraised subject, they can be part of the evaluation as a completely. It is known that these measured certainly cannot evaluate the learning directly, but yes, to cooperate as part of this evaluation process.

## 2.1 DESCRIPTION OF THE PROJECT

This project seeks to specify a proposal that allows the use control and the accompaniment of all the activities exercised on the available didactic material in the Internet, as well as to use the acquired results of this use for the assembly of a base of data that, together with specifications done by the teacher and/or assessor, he can be part of the composition of the process of evaluation of the learning.

The proposed model bases on the architecture customer-server used in the Internet, where the "didactic" material represents the illustration of the server, of the type Web, while the students represent the customers, through its navigators.

The system should foresee the use of two basic modules. A first one, responsible for the control/accompaniment of the user's/student sailing and generation of the log files, where it consists all the activities accomplished by this student in the site (didactic material properly says). Para that the proposed model can accomplish that accompaniment and generation of the logs, three stages should be accomplished:

- A registration process: The students / users that will have access to the didactic material published at the distance, will owe, initially, to register in the respective site. The same can be accomplished automatically (at the distance), being filled the available form in the initial page of the course. This registration process enables the access to the whole didactic material, after having made the logon in the course.
- The student's initial access with its identification: species of book virtual point, the corresponding to doing the call " in the traditional teaching. It should register every moment of the student's entrance / user in referred him course, what points for the beginning of its study.
- The sailing properly said in the didactic material, the accompaniment process: all the activities accomplished by the user/student on the site (on the didactic material/course, used as synonyms in this work) they are stored in the log files. It is important that the student has science that is being monitored in whole site, that its " steps " are being stored in log files. First, because he/she happens more credibility of the course when, since its beginning, they are shown whole the rules and its operation and, in second place, the students, in a general way, take its school activities more seriously (academic) when they know that are being observed by the teacher (monitored by the system). of course this last one is more evident when the resource of the teaching at the distance is used mainly for complementary activities of study. It is notorious that the decisive factor of the student's success, with this or other systematic of teaching any, is its degree of interest and dedication to the specific activities of the course.
- Already in the second module, once established the control of the sailing and generated the respective log files, there is the need to generate a base of data with all those information. That base is taken for another atmosphere with the purpose of to analyze and to refine everybody these data.

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Besides, the teacher and/or assessor establishes a group of specifications regarding the didactic material, composing them in approaches that will be part of the process of evaluation of the learning. They are defined the important judged approaches for the proposed course, specifying for them a group of values and/or respective indexes. Based on these approaches filters and statistical and graphic reports they are accomplished on this base of data, in agreement with the established specifications, so that it cannot him, like this, to generate notes for the students in each one of these approaches, and still, it can be identified a profile for this student or group.

The main objective of this module is, starting from the specifications done by the teacher and / or assessor for the proposed course, together with the integral information of the generated base of data, to propose some approaches (in agreement with the teacher and / or assessor) to compose the process of evaluation of the learning. These approaches refer, mainly, the characteristics observed in the traditional teaching that they continue to be used in this methodology, even so, generated by different mechanisms. Still, for each used approach a note is generated, generated by the own module, that can still be used so that he/she/it can identify a specific profile generated for the students or for the group as a completely.

## 2.2 Module II

In the current version, the prototype fastens the whole group of rules regarding the approaches proposed to compose the process of evaluation of the learning, in way to establish a group of degrees, of notes. The numeric generation of the degrees is made, basically, starting from percentile established in the comparison and / or analysis done among the suggested information and esteemed by the teacher and / or assessor, with those generated again by the student during the process beginning of the course. This way, for example, in that module a percentile one is established equivalent at 100% for those students that navigated in all the pages of the didactic material, of 50% for those that navigated equivalent amount to the minimum of dear pages and, starting from there, in a decreasing way the amount of navigated pages arrives at 0% of the total. The more appropriate judged form, in agreement with the established in the conceptual model of the proposal done for the system, it is that those percentile ones can vary in agreement with the judgement and the teacher's approaches or assessor, because certainly it is found a diversity of approaches and different teachers' positions, related to a same module, subject or study area.

## 2.3 Approaches for evaluation of the learning

The model should propose, starting from its module II, a group of approaches to aid in the composition of the evaluation of the learning, or, in some cases, until executing it. The main source for formation of this base of data resides in the log files generated by the module I.

Besides this proposition, a series of information can be modeled starting from data maid's base, and that it can vary in agreement with the objectives proposed by the different courses at the distance, or in agreement with the work profile exercised by the teacher, author and / or assessor of the didactic material, and still, for the several characteristics that the students can have, be fruit of its origin diversity, formation or experience in the respective area of interest of the course in subject.

Independent of these items it was established a minimum group of information that, analyzed individually and in group, it is believed they be useful in the specification of the approaches that one wants to propose in the composition of the evaluation of the learning. The sailing sequence generated by the student during the accomplishment of the course at the distance. A degree for this sailing is generated starting from the comparison of the chain of characterses of the sailing sequence

suggested with that generated by the student. He suggests himself that the percentile of the found similarity corresponds to east degree, in agreement with the structure specified for this field in the table. Still, it can identify more than a suggestion for this suggested sequence, being used as degree the found percentile best of similarity.

◆ The total time used by the student to accomplish the course at the distance. They are added all the times of the student's permanence in each one of the monitored pages, and compared with the time suggested as ideal to accomplish the whole proposed course in a satisfactory way to the proposed objectives. The degree destined at the time is resulting of the analysis of the total time added for the student with that esteemed (suggested), relative to the percentile of proximity of these times: the same (100%), limit superior of twice the dear time (0%), limit inferior zero of time (0%) and limit medium suggested minimum.

◆ The date at the beginning and the date of end of the accomplishment of the course, referring to the first and last access (I liberate virtual point, LogOn) accomplished in the didactic material. A lot of times, in a traditional way, it can be noticed the degree of the student's interest by its participation in classroom, during the accomplishment of a given discipline in a semester, for example. It would be possessor of a larger " consideration " that student that of the beginning to the end of the classes was shown interested, and not just in certain period, in agreement with its interests, or even comfort. This referring items the dates at the beginning and end has for objective to verify the period of the student's participation in the accomplishment of the course at the distance. He suggests himself that the number of days in that accomplished the course it is compared with that esteemed, fruit of the difference of time among the initial and final date, discounting of this last one 10%, as margin of safety (for those that contained it previously the foreseen date, after accomplishing all the activities proposals for the course). Like this, the number of discounted foreseen days the 10% would indicate the 100% of this approach, decreasing starting from there until zero, the degree regarding the period.

◆ The accomplished accesses can be considered (LogOn) on the material as indicative of participation, what corresponds the presence in classroom to each present class, in a teaching method typically traditional. It can be foreseen, for example, that once a day, in the minimum, and three, at the most (for not decreasing the granulation a lot), the student accomplishes accesses to the material (virtual point book), and these accesses correspond to a degree of the student's participation in the course. This item can be shared with the previous, that is, analyzed jointly with referred them dates at the beginning and end.

◆ The amount of pages visited by the student is an approach that corresponds, in a similar way, to the number of pages certain book read by the student in classroom. On the accomplished control, the total number of pages is counted visited by the student, and for that case, he/she is considered valid the page that obtained time of superior permanence to thirty seconds. It is established the total amount of pages that they integrate the didactic material (those that one wants to monitor), as parameter of 100%, and a minimum amount of pages that they should be visited by the student, suggested by the teacher and/or assessor, so that he assists to the minimum requirements proposed for the course in subject, being indicated by the attribute Aval\_Indicad.PercPagMin. Starting from this point, there is a proportional decreasing until the zero, for the respective degree of this approach.

◆ Electronic Subjects distributed along the didactic material can be useful for the sum or profile of the evaluation. The correction, also accomplished in an automated way in the same ambient Web, generates degrees when being compared with the correct solutions proposed by its teacher and / or author. The average generated for these degrees, in agreement with the amount of subjects, or groups of existent subjects, generates a degree of electronic subjects. A quite interesting item, because besides forming more an approach to the evaluation, he can serve as reference, and even of requirement, for the finish or passage among modules inside of the same didactic material

(levels of difficulty, of progression). Still, the degrees obtained in certain subject of the material can be analyzed together with its respective times of study (sailing) obtained.

Many of the approaches can assume a high subjectivity degree if taken separately for the evaluation of the learning. For example, a student that stays an excessive judged time to travel certain chapter or subject of the didactic material, it cannot, if studied in an isolated way, to mean a high degree of interest and effort so much by virtue of the difficulty, as well as, of interest and effort by virtue of the easiness, identification and personal taste. For so much, this dice could be better measured analyzed jointly with the worn-out total time for the whole didactic material and the average for chapter or this same student's subject.

It is worth to stand out, that the own education at the distance possesses a very peculiar group of own characteristics, as well as the traditional form of teaching. Many of these characteristics were brought of the "old school", and that here generated in a different way, they continue to exercise the same importance in this new methodology. It is, simply, a new proposition. The substitution intention is not had, but, of intending an alternative in the attempt of reversion of the current teaching picture, mainly of Brazil, as well as of extending this modality for several and different applications.

### **3 ENVIRONMENTS PUBLIC OBJECTIVE OF THE STUDY OF CASE**

The case study was accomplished with students of the 1st series of the Medium Teaching (6 groups with 150 students, like this distributed: groups 101, 25 students' 105 and 106; groups 102 and 103 of 24 students; and 27 students' group 104) of a public school, in the period understood between 6 and September 20, 1999, it leaves of the 3rd Two months, in the discipline of History. To 1st series it is composed for.

The chosen course went it remains to Batalha dos Guararapes, whose didactic unit makes part of the Plan of Matters of this discipline and series.

#### **3.1 Applied methodology**

The accomplished work was differentiated among the 6 groups. Two groups, 102 and 104, they studied the subject Guararapes just using the available didactic material in the Internet; other two, 103 and 105, besides having studied the material through Internet, the likeness of the above exposed, he/she had in class room, in a traditional way, the classes worked by the teacher of History on that subject; and the two remaining groups, 101 and 106, they had the classes you just witness worked by the teacher in class room. This way, the whole group of students of the 1st series would have access the information on the Battle of Guararapes, one at the distance, others in a traditional way, but with the same subject, in volume and quality fellow creatures, just differentiated by the peculiar characteristics of each involved environment.

At the end of the course, in both teaching forms, a same local test was executed with the 6 groups. Starting from there, of ownership of the all the students' results in the test, together with the logs generated in the participant students' accompaniment of the course at the distance, it could be arrived to relative conclusions, or the simple indications, that the approaches initially judged important to compose a process of evaluation of the learning they are, really, significant, and like them they behave when being compared with those obtained in a traditional way.

### **4 CONCLUSIONS**

The teaching at the distance is an important alternative in the search of the basic and complemental formation of the learning, which, in a main way, it motivated the study of a model that could not in an efficient way to control and to monitor the accesses to an available didactic material at the distance, in ambient Internet, and that could contribute with important approaches to the evaluation of the learning, that comes to contain the whole process.

The developed model proposes an efficient and viable alternative for this implication, in way to reach the proposed objectives. He generates a (i) base of data originating from of the control accomplished on top of all the activities exercised on the didactic material, without the need of any alteration in the natural form of I handle of this teaching atmosphere, and it creates a (ii) base of information, originating from of the module I and of the author's interactive (teacher or assessor).

The study fact could show that (i) the teaching at the distance is a much more difficult methodology than the traditional form, mainly in what he/she says respect at the time I spend properly for the material elaboration and accompaniment of the course said; that (ii) it can have conflict of the chosen approaches and mensurated with the didactic material and, for consequence, with the accompaniment process (objectives and proposed teaching strategy); and that the (iii) historical of the accompaniment it can aid in the identification of problems in the interface, allowing, still, (iv) the association of a profile individualized to each participant user of the process, with a series of relative information the person, to the didactic material, to the course, to the exercise of the course, and to the crossing relationships among these information.

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