AulaWeb: a B/ E-Learning platform in UPM

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1. What is AulaWeb?

2. Pedagogical scenarios on AulaWeb
   1. B-learning: B-Learning with engineering students in Computer Science Courses
   2. E-learning: The statistical module of AulaWeb: A tool for improving e-learning quality

3. Conclusions
1. What is AulaWeb?

- WWW-based course-support system
- Valid for all kind of courses and subjects
  Specifically CS Department:
  Computer Science, Information Technologies, Java Programming, C/ C++ programming, Object Oriented Programming
- Easy GUI & no programming required
- Essential functions for interactive teaching-learning (only) through WWW
- Password authentication & users management
- On-line graphic assistance to publish contents
- On-line collect & deliver homeworks
- Self-assessment system with test configuration including (random and/or multimedia) questions from the database
- Chat room and forums
- Access data statistical processing
2.1 Pedagogical scenario: b-learning

Face to face

Labs

Exam.

Tutorial

Face to face classes

E-learning Process

Communication Tools

E-documents

Self-assessment

Homeworks - Labs

AULAWEB

Forum

Chat

Quest.

e-learning
### Access to AulaWeb by CS students

<table>
<thead>
<tr>
<th>Statistical Measure</th>
<th>Course 2004-05</th>
<th>Course 2005-06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>226.82</td>
<td>180.85</td>
</tr>
<tr>
<td>Median</td>
<td>191</td>
<td>155</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>173.71</td>
<td>125.10</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>12.05</td>
<td>2.98</td>
</tr>
<tr>
<td>Asymmetric Coefficient</td>
<td>2.410</td>
<td>1.40</td>
</tr>
<tr>
<td>Range</td>
<td>1704</td>
<td>850</td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>882</td>
<td>850</td>
</tr>
<tr>
<td>Sum</td>
<td>127705</td>
<td>95130</td>
</tr>
<tr>
<td>Size</td>
<td>563</td>
<td>526</td>
</tr>
</tbody>
</table>

**Number of accesses to AulaWeb by CS students during the first term (2005-06)**

![Number of access to AulaWeb by CS students during the first term (2005-06)](image-url)
Self-assessment module

- 11 Chapters
- 1 self-assessment exercise per chapter
- TurboPascal code questions are a powerful tool
- In CS subject, first semester in 2005-06
  - 500 students did
  - 5851 SA exercises with
  - 58510 questions
- We didn’t correct any question !!!

<table>
<thead>
<tr>
<th>Datos generales</th>
<th>Histograma de notas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumnos participantes: <strong>500 de 526</strong></td>
<td>-10 &lt;-0</td>
</tr>
<tr>
<td>Ejercicios realizados: <strong>5851</strong></td>
<td>0 - &lt;1</td>
</tr>
<tr>
<td>Media de ejercicios por alumno: <strong>11,7</strong></td>
<td>1 - &lt;2</td>
</tr>
<tr>
<td></td>
<td>2 - &lt;3</td>
</tr>
<tr>
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<td>3 - &lt;4</td>
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<td>7 - &lt;8</td>
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<tr>
<td></td>
<td>8 - &lt;9</td>
</tr>
<tr>
<td></td>
<td>9 - 10</td>
</tr>
</tbody>
</table>

- Total preguntas: **58510**
  - Correctas | 46636 (80%)
  - Incorrectas | 7876 (13%)
  - Sin responder | 3798 (6%)
  - Índice de aciertos: **8**
  - Nota media por ejercicios: **8**
Virtual environment programming (Borland type) with a Java Applet!!!

Virtual Compile & run functions

We compare results with the correct ones

An on-line compiler is needed for processing this type of questions

Enunciado
Completar la función `trazaS` para que devuelva el valor de la suma de los elementos de la diagonal secundaria (traza secundaria) de una matriz NxN de valores reales dada como parámetro de la función.
Self-assessment methodology

- Questions have appeared on previous exams
- Contribution to the subject grading
- Turbo pascal, C, Java questions
- A fixed deadline for every exercise
- Deadline every week
- Two weeks for delivering every exercise
- 10 questions in every exercise
- Students can repeat a exercise
- They can increase their average mark
Self-assessment improves results?

Effects of self-assessment on the number of successful results on CS topic during the last six years.
2.2 Pedagogical scenario: e-learning

E-learning Process

- Asynchronous classes
- E-documents
- Self-assessment
- Homeworks - Labs

Communication Tools

- Forum
- Chat
- Quest.

AULAWEB

e-learning

Information Technologies and Java Programming modules
The IT and JP activities

- Review a lesson per week in the Curso online section asynchronous classes
- Read e-documents
- Do a self-assessment exercise every one or two weeks
- Do homework every two or four weeks
- Participate on optional chat every week
- Participate on obligatory chat some week (4)
- A final collaborative work on groups
The minimum requirements in e-learning

IT and JP Documentation published on AulaWeb:
30 html documents including 164 jpg images for every Curso on-line in SCORM format

We need to know:
• If all the nodes are visited
• When a node is visited
• Who has abandoned the course
• Who hasn’t visited a node
• The course tracking of a student
• Compare a student with the average

HMTL Introduction

Definitions
- DTD (Document Type Definition): formal specification of language. The authoritative source for information about HTML and the HTML DTD is the World Wide Web Consortium (W3C) at http://www.w3.org. The World Wide Web Consortium is a not-for-profit organization that coordinates the evolution of the Web.
- HTML (Hyper Text Markup Language): a format or "language" a subset of SGML to create a text file that allows to define a links from this location to new location within the same page or to a new page altogether forms multimedia objects.

Features of HTML Language
- An HTML file is a text file containing small markup tags
- The markup tags tell the Web browser how to display the page
- An HTML file must have an .htm or .html file extension
- An HTML file can be created using a simple text editor

What is HTML Markup?

It is a set of instructions that tells the Web browser how to display the page. These instructions are in the form of a text file that contains tags that define the structure and content of the page.
Obtención de la estadísticas

La página actual permite obtener de modo sencillo toda la información que dese sobre el uso del curso online de la asignatura.

En primer lugar seleccione en el Árbol de contenidos la unidad, tema o capítulo sobre el que desea realizar la consulta. Después, elija en el formulario los siguientes campos:

- Tipo de información requerida
- Alumnos consultados
- Periodo temporal sobre el que realizar la consulta

A continuación haga de elegir la agrupación, apareciendo seleccionado por defecto el tipo de gráfico más explícito, si bien podrá cambiarlo si lo desea.

Si se habilita la opción Acumulativa y la selecciona podrá observar cómo se han ido acumulando los datos obtenidos a lo largo del periodo temporal elegido.

Finalmente, pulse el botón Mostrar para ver el gráfico deseado.
Parameters of Statistical Module

Different information types
- Number of visits
- Visit date
- Duration of visits

Accumulative

Several levels of clustering and detail
- All the students
- One student
- One student and the average

Date interval
- Complete academic course

Different criteria of grouping data. Three types of graphics
Bar Diagram

Number of hits of all students during the whole course

the tutor could avoid abandon of the course by students
Line diagram

Number of visits of a student vs the average

the tutor can identify

students with a low/high level of activity
Bar Diagram

Number of hits of all students during the whole course grouping by time slots in a day

Visitas de todos los alumnos al CURSO COMPLETO durante todo el curso 2005-2006
Distribución de visitas por franjas horarias. Visitas totales: 354

The tutor can establish the schedule of synchronous activities
3. Conclusions

- Academic staff acceptance of e-learning platforms is positive
- AulaWeb is used on b-learning as a tool to publish e-contents, to collect & deliver homeworks, to do self-assessment evaluation
- Self-assessment module helps students to realize progressively his level of knowledge
- Self-assessment module allows the teacher to track the students’ progress during the course
- Statistical Module in AulaWeb together with e-content in Scorm format of Curso online improves the performance of online courses
- SM allows to know the real use of the platform by students.
- SM helps to analyse the use of a specific resource or activity.
- SM focus on the improvement of the course contents on a more efficient way
- SM allows to know the student connection habits to improve them.
Questions?

- Contact
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