Strumenti di analisi per la valutazione di un gruppo di apprendimento online

Instruments d'analyse pour l'évaluation d'un groupe d'apprentissage en-ligne

Tools for evaluating an online learning group

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Two main directions

Students and workers migration, life-long learning, multinational organizations...

E-learning

Theories development, growing expertise, best pratices availability,

Focus on competences assessment & certification Towards standard procedures (Bologna Process)

CONVERGE

DIVERGE

Focus on systems and processes evaluation. Towards new evaluation models and concepts

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Converge

- Standard test & analysis tools
- Students are seen as individuals
- Students are (eventually) online
- Teachers are (normally) offline
- Assessment is placed at the end of a learning phase
- Assessment involve only teachers
- Quantitative data only are taken into account

Diverge

- Original (experimental) test & analysis tools
- Students seen as groups (communities)
- Students' evaluation procedure are (mostly) online
- Teachers' evaluation acts are (mostly) online
- Evaluation is a continuous process
- Evaluation involve all subjects
- Qualitative data are also taken into account

A common field

- In this paper we try to find a common field for convergent and divergent approach
- Quantitative data can be used to support tutors (and studentes) in their evaluation process
- But we have to collect more data beyond simple navigation tracking
- We have also to define an unifying model

The underlying theory

- Learning is “acquiring control over an environment” (Dewey). Educative environment are designed to progressively let control to users.
- While the student progressively acquires control, the environment itself is being modified by the student
- Evaluation is seen as a (dynamic) property of system, as a meta-property: trying to control how environment passes control to user.

Connection, Collectivity, Continuity

This approach to evaluation may be summarized as Connection, Collectivity, Continuity:

- From off-line to on-line activities
- From focus on single to focus on group
- From experimental data to everyday's data
- From offline evaluation to real-time evaluation
- From quantitative (numeric) data to linguistic data

Focus on group learning

- E-learning is more directly tied to group learning than to individual learning
- A group learns when its common knowledge, competences, metacompetences etc. evolve
- **What if we try to evaluate group evolution by mean of analysis of linguistic interaction in group?**

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Normal group evolution

- We may imagine a *normal* group evolution model, the way a typical online learning group evolve
- This evolution should correspond to variations in some parameters in linguistic interaction
- We may focus on different aspects:
  - Lexical precision (from generic to specialized)
  - Interaction modality (from passive to active)
  - Awareness of processes (from object to meta level)

A simple 5 items model

PHASE A (start with...)	PARAMETERS	PHASE Z (ends with...)
Use of generic terms, from common day language	REGISTER	Use of correct, specialized terms
Interaction difficulties	OBJECT	Work done collectively
Language and terms (object)	LEVEL	Rules and their applications (meta)
Request for help, for answers, for support	MODALITY	Adding new elements (objects, links, structure)
Doubt on success and profit	TONALITY	Satisfaction

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Which data?

- A great mess of textual data to be analysed is often available:
  - Messages sent to tutor (help requests)
  - Messages sent to other students (personal interpretations, co-work proposals, ...)
  - New, original text uploaded by students as course materials
  - Notes (private and public), bookmarks, agenda as comments to course materials
  - Chat logs

Some examples

- In designing A.D.A. E-learning platform we tried to implement this model,
- We choose an underlying data structure that do not distinguish among teachers' data (course) and students' data (forum, messages, etc)
- We added functions to analyse these data
- We provided two simple mechanisms to extend functionality (User-modules and Actions)

Knowledge management

- In ADA platform, courses are internally kept, structured as nodes and groups of nodes, linked among them
- While *authors* are the users directly involved in creating nodes, other users (*tutors* and *students*) may add private or public notes
- These original pieces of knowledge may vary from one edition of the same course to another
- They can be “promoted” from *noTes* to *noDes*, so modifying the course structure and data

ADA Evaluating Tools

- ADA give users (tutors, but also students and authors) some monitoring and evaluating tools:
  - lexical tools, to analyze course and forum texts (and soon chat logs)
  - report tools, to confront single student with entire group behaviour

Reporting tools

- Report of student classes includes, for every student and on average, typical tracking data but also linguistic interaction data:
  - Visits
  - Test scores
  - Messages sent and received
  - Added notes
  - Level

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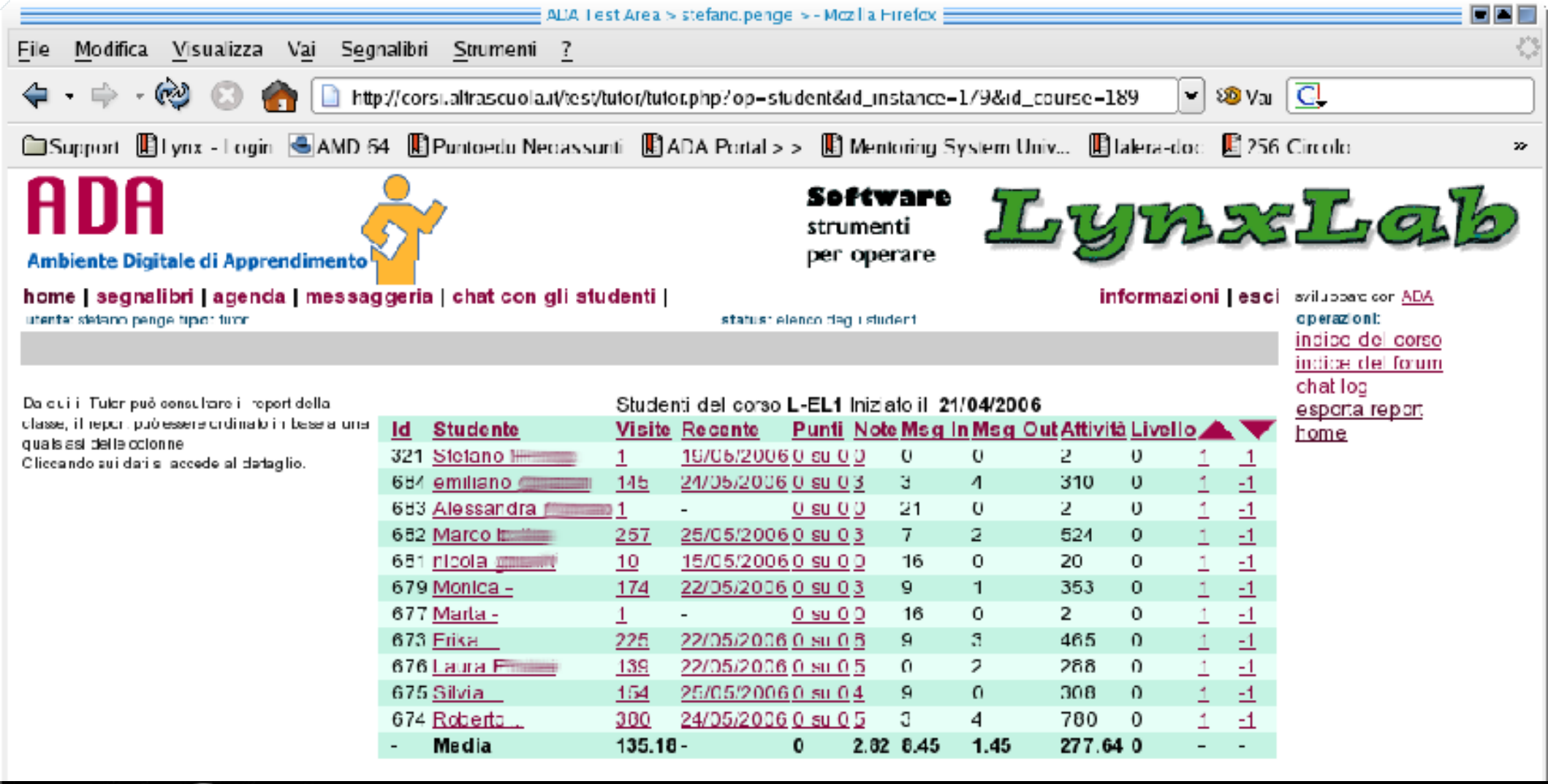
Reporting tools



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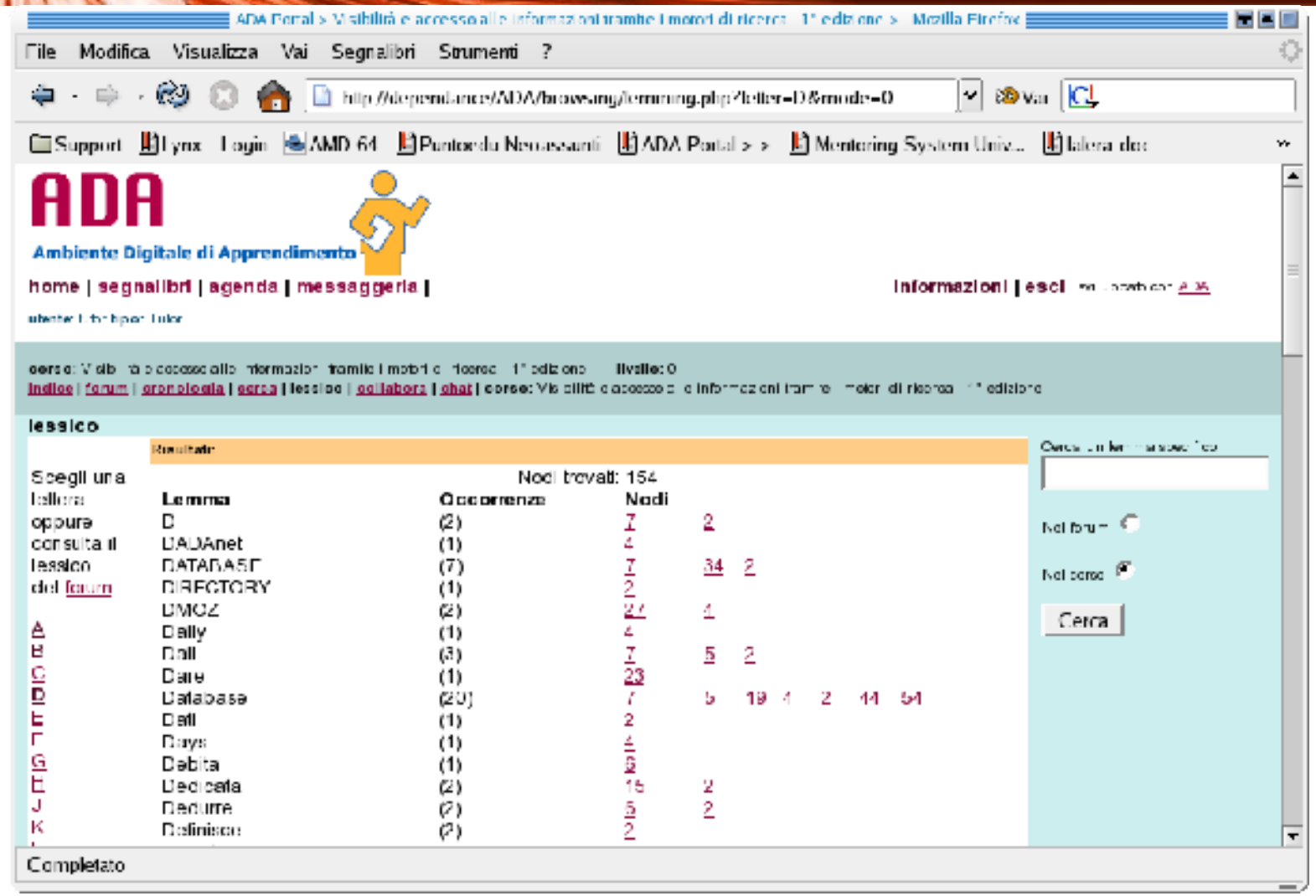
Activity Index

- To help tutors and students to have an insight of global situation, we added a derived value, called Activity Index, that simply summarizes all data in an expression
- We gave data different weight; adding a note is more relevant than simply read it
- The activity index is intended to “capture” the evolution of the group in terms defined before

Lexical tools

- Lexical tools let tutors (and students):
  - see occurrences and distribution of every word in forum (and in course)
  - search for a specific word
- It is possible to use lexicon to find:
  - if, an when, a course specific term appears in forum notes (and where in course nodes)
  - if, and when, questions and doubts appear in forum notes

Lexical tools



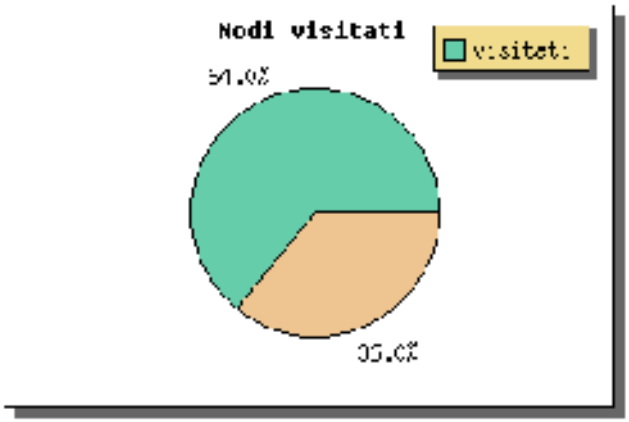
Student history

- For every student, all data are summarized in a “classical” report along with student's history:
  - Percentage
  - Total time spent
  - Average time spent
  - Last visited nodes and notes
  - More visited nodes

Student history

Nodi nel corso: **31** Note nel forum: **35**
Nodi visitati: **42** - Numero di visite: **145**

Percentuale nodi visitati/totale: **64%**



Tempo totale di visita dei nodi (in centesimi): **2:10**
Tempo medio di visita dei nodi (in minuti:secondi): **0:54**

Punteggio esercizi: **0 su 0** Note inviate: **3** Messaggi inviati: **4** Indice attività: **331**

Ultimo 10 visite

1	Obiettivi	24/05/2006 21:57:17	-
2	Informazioni	24/05/2006 21:57:14	-
3	Calendario	24/05/2006 21:57:11	-
4	Date appelli	24/05/2006 21:57:5	-
5	Calendario	24/05/2006 21:56:32	-

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Offline analysis

- All these data (forum, chat, report) can be exported in a Spread Sheet file to be analyzed with external, offline tools and to be represented as graphs
- While we are adding more analysis functions to ADA, we also are planning to design an architecture that filters and keep separates copies of data in a second Data Base, where OLAP-style tools can be used.

Further informations

- ADA is a totally open software, developed by Lynx s.r.l (Rome) and released under GNU-GPL license.
- Further informations and downloads are available from official web site: http://ada.lynxlab.com