Don't forget the human actors:
The need of Tools and Services
supporting individuals, groups, communities

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Achievements

Technology based learning environments

ICTs in Education implementation state: Questions

Designing the Future

Services: supporting actors and contexts’ cultural changes

Services in School Units and Teachers’ Communities

Interaction Analysis tools: supporting actors selfregulation

IA tools examples
Achievements ⇒ Technological environments

Technology based Learning Environments Categories

- Simulations
- Modelling
- Robotics
- Virtual Reality
- Games

LEARNING TECHNOLOGY AND EDUCATIONAL ENGINEERING LABORATORY
Technology based Learning Environments Categories

- Hypertexts
- Drill and Practice
- Intelligent Problem Solving Systems
- Open content tools
- Network based environments

Achievements ⇒ Technological environments
Achievements ➔ Technological environments

- Networks based environments
- Distance Learning Platforms
- CMC Tools
- Collaborative Systems
- Mobile technology
Achievements \(\Rightarrow\) Technology Enhanced LE

\(\Rightarrow\) ‘complete’ technological systems
\hspace{1em} accompanied by:
\(\Rightarrow\) series of interesting learning activities
\(\Rightarrow\) series of students’ activities-sheets
\(\Rightarrow\) teachers’ strategies and approaches
\(\Rightarrow\) scenarios of use: students’ settings, conditions, context

*Smooth integration, traditional pedagogical tools, with technological ones

Rich “Technology Enhanced Learning” Environments

\(\Rightarrow\) New learning activities: impossible with traditional means

\(\Rightarrow\) Extension of the space and the ‘context’ (human and material) of education

\(\Rightarrow\) Higher level of learning objectives: solving open problems, creativity, ability to collaborate, etc.
ICTs in Education ⇒ Implementation State

.....*however, before discussing the future*

⇒ The actual integration of ICTs is not always successful,
.....so as to really transform education

*Educational System level*

⇒ There are improvements, especially for the countries that spend a lot on education: Finland, Sweden, etc., and they do not associate the cost-profit policy with Education.

⇒ There are improvements when teachers:
- have a strong educational background and professional culture, before entering Education (pre-service education)
- are acknowledged regarding their professional status and profit from essential and profound in service ‘training’.
There are cultural obstacles:

**Students**

...when for instance

- The error continues to have negative value, while in most of the technological environments we try to apply constructivist approaches, inquiry approaches, etc.
- The collaboration is not something acquired... when the individual evaluation is still dominant
- The high level learning objectives (e.g. of initiative, synthesis, argumentation, creation, etc. etc.) are not included in the formal evaluation

**Teachers & school units**

...when for instance

- Teachers have to handle logistical difficulties, they are not well educated on the new pedagogical & didactical strategies or on how to handle collaborative learning etc, etc.
- School units are not able to define explicit yearly objectives and plans on how to improve ICTs implementation
“Designing the Future”

Designing technologies ... Don’t forget the human actors

Our Critical Duty:

✦ Continuous effort to influence and “Design” the Educational Policies in our Countries as well as in Europe

✦ Educate the actors of the educational systems (future teachers, teachers in service, educational staff)

✦ Continue to Design new and rich technology based learning environments

✧ In parallel, focus on two specific axes of support/intervention:

✧ Support in the wider context of implementation:
  => Services of human support

✧ Support during the interactions with the technological environments:
  => Interaction Analysis tools for awareness and self regulation
Services of Human Support

School Unit & Communities

Services of Human Support:
for actors and contexts’ cultural changes

Services in School Units and Teachers’ Communities
The problem of scale up of pilots projects in educational systems

Some difficulties that could be faced

- New approaches: Inquiry Learning, Modelling, Collaborative learning through computers
- Teachers need an initiation in the ‘philosophy’ of the environment
- They need support on every-day pedagogical-didactical issues
- School Units need consultancy on how to organise the integration in school curricula, school program, teachers to be involved, classes to be involved, etc.

The example of “MODELLINGSPACE” scale up in European Countries “e-Comode project”
Services of Human Support

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The example of "MODELLINGSPACE" scale up in European Countries

"e-Comode project"

Chat tool

Shared activity space

Collaboration Panel

Primitive Entities

Search Learning Material
Services Supporting ICTs Implementation

Initiation/Education
- Educ Material
- F-t-F Discussions
- Training Sessions
- I. Workshops

Teachers’ Network
- Forums of Discussions
- Exchange of Materials through Repository
- Communication (e-mail, chat)

Consultancy
- Technical Consultancy
- Organisational Consultancy
  *School Unit private consultancy*

C. Support
- Technical Support
- Pedagogical Support
  *Private case specific Support*
Services ➔ Implementation

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Hybrid model: virtual & face to face
Public level consultancy services & Private level
Predefined material, actions and tools & emergent/dynamic material
Services ⇒ Initiation & Education

Initiation/Education

Teachers’ Network

Consultancy

C. Support

- International Workshops (1st, 2nd, 3rd)
- F-t-F Discussions
- Initiation-Education Local Sessions
- Educational Material

Materials for ICTs & SM Coordinators / Consultants

1. Dissemination – Initiation Material (leaflets, ppts, etc)
2. Implementation in School Units Approaches
3. Pedagogical Approach
4. Overview of Research results
5. Scientific papers (case studies)
Services ⇒ Teachers’ Network

Initiation/Education ⇒ Teachers’ Network

Consultancy ⇒ C. Support

- Forums of Discussions
  ⇒ European level,
  ⇒ National level,
  ⇒ Regional / School Level
- Exchanges of Materials through Repository
- Communication (e-mail, chats)
Services ⇒ Consultancy

Private, case specific Consultancy for:

- School Unit Level (horizontal implementation, vertical one, changes in the school curricula, etc)
- Teacher Level
  - subject matter level
  - class specific level
Services ⇒ Continuous Support

- **Initiation/ Education**
- **Teachers’ Network**

▷ Private, case specific Support for:

- Technical issues
- Specific Pedagogical and Didactical Issues

**addressed to:**
- Teachers and or
- ICTs & subject matter Coordinators
Human support via IA tools

Individuals & Groups

Interaction Analysis tools: supporting actors selfregulation

IA tools examples
Emergence’s reasons of a field

The need to support ‘participants’ in a metacognitive level:

- Working in computer based LE is an activity more complex than in paper and pencil: it is difficult to be aware of «what I have done»

- Working in CSCL systems is an activity much more complex than working individually

- Students cannot create an ‘image’ of their own activity, or this of other students/collaborators (as individuals, group or community).

- For teachers, it is very hard to manage activities in collaborative environments or in stand-alone systems, due to the very complex interactions that occur.
The core purpose of computer based Interaction Analysis (IA) is to assist technology based activities’ participants (with different profiles & roles), working on standalone or social environments, providing a cognitive or metacognitive support.

The support is provided via Interaction Analysis [IA] tools that
- offer directly information on interactions and activity products (e.g. via visualised IA indicators) to the participants, so as
- to be aware and regulate their behaviour (either as individuals or groups)
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For instance, Interaction Analysis Tools could support:

- **students, groups:** awareness, self-assessment, metacognition \(\Rightarrow\) selfregulation of their own activity
- **teacher(s):** diagnosis, assessment // teachers’ strategies adaptation
Interaction Analysis $\Rightarrow$ Territory

Interactions’ Analysis

- Tools & Methods for Researchers
- Intelligent Systems Guiding or Adapting

Computer-based Interaction Analysis Supporting Selfregulation

Metacognitive Assistance to Learners
Cognitive & Metacognitive Assistance to Teachers
Processing data for Observers
Interaction analysis tools:

i. awareness tools’
ii. ‘assessment tools’
iii. ‘guiding tools’
iv. mixed tools
IA ⇒ IA ‘tools’ examples e.g. in LE

‘Awareness’ functions addressed to the ’administrator’ or the teacher

phpBB
Forum statistics
Number of posts
Number of users
Database size

Webct,
Summary of activity report:
Most active day,
Most active hour per day,
Average users per day, etc.

‘Awareness’ functions addressed to students

Hoppe, 2001

LTEE, 2001
Addressed to students: Metacognitive Assessment
[collaboration mode & coll. quality assessment]

Addressed to teachers

Process oriented Awareness

Collaboration mode

Despres, 2000

Gerrosa, 2005

Jermann, 2001

Barros, 2000

Martinez, 2004

Hlapanis, 2005
Interaction Analysis indicators constitute variables that describe ‘something’ related to:
- the mode, the process of the activity of the considered ‘cognitive system’ (individual, group, community)
- the features or the quality of the interaction product,
- the mode or the quality of the collaboration, (when acting in the frame of a social context formed via the technology based learning environment).

These variables have to be interpreted, taking into account, the learning activity, the profile of the participants, the context of interaction, etc.
IA field

Achievements

➤ **State of current IA support**

- Function(s) in a system
- Component in a learning environment
- Complete IA tool

➤ **IA tools current developments for:**

- Forums *(e.g. Aula IA support: to teachers, DIAS system: students & teachers)*
- File exchange- contribution systems *(e.g. Cordella)*
- Learning environments *(like MODELLINGSPACE, Knowledge Forum, CoolMode)*
- Web-based platforms
- Scientific communities platforms *(CCI-IA service Kaleidoscope NoE, etc.)*
IA field ⇒ Achievements

➢ State of current IA support

DIAS IA tool user: can select set of indicators based on the available ones
(more than 60 low and high level indicators): ➢ for individual students, groups ➢ for teachers
**Usages of IA tools**

**USAGES of Interaction Analysis Tools**

- **Students**
  - Regulation of their actions:
    - degree & mode of participation
    - activity product
  - Regulation of activity process (management)

- **System**
  - Adaptive Interface
  - Advises functions

- **Teachers**
  - Monitoring *(on the fly)*
    - intervention per individual
    - intervention per group
    - group composition adjustment
    - ...
  - Students’ assessment
  - Selfregulation of monitoring strategies

- **Administrator**
- **Researcher**
IA field ⇒ Perspectives of IA

...a new research field to work on

▷ Design of interaction Analysis tools/components & functions
  ➞ More profound indicators and complete models
  ➞ Tailored indicators as well as indicators sets (models) for various actors profiles and roles.

▷ Development
  ➞ Development of IA tools for a wider variety of learning environments
  ➞ Independent interoperable tools

▷ Research with IA tools users (users’ requirements, tools’ effects)
  ➞ Empirical Results (more results on IA tools effects to users)
  ➞ Emphasis on ethics aspects and ‘community’ social rules

Biblio
http://telearn.noe-kaleidoscope.org/ {open archive on TEL}
www.ltee.gr/adimitr
Designing the School of Tomorrow: Advanced Technologies in Education

The advanced technologies, ...
...need also advanced tools and services supporting directly the human actors and human systems so as to be, in fact, integrated in Education, and transform it.