

# **XTEACHING (°)**

## **XML in educational Communication and E-Learning Life Cycles**

### **A- Why E-Learning**

E-Learning is one of the main interests of the European Commission and certainly a central step in today's social evolution.

Understanding the e-Learning phenomenon is a tremendous task, for which methodologies are certainly required: understanding e-Learning requires the understanding of educational Communication.

Here the word "educational" is used as a metaphor for "education for young people". In reality, a new attitude to teaching is required because of the continuous changes in our way of living. Even adults have to be considered as young people who must understand new behaviours and a new world all their life long.

### **B- Why XML**

XML is essentially a well-defined tool designed to develop taxonomical human descriptions and to connect those descriptions with formal computable structures.

Such a central role for XML has been able to lead to a real revolution in the field of ICT. Every tool is easily interfaced with every other tool in computer technology thanks to XML.

But XML is being used in every discipline (e.g. Chemistry, Biology, Astronomy) as a consequence of the extreme usability of the taxonomical implications due to XML within the field of documentation. Even legal as well as administrative aspects are being treated with XML.

XML has many derived languages as well as notions.

Taxonomy has a central role in making explanations rigorous and understandable. To distinguish the role of the parts of speech in lectures, books, multimedia, moving pictures, as well as in virtual reality is certainly a way to develop quality criticism as well as style in educational products and in educational performances (lectures, videoconferences). XML is today's ideal conceptual tool for developing taxonomies in teaching as well as for teaching.

### **C- What is XML.**

What is XML: a complex set of technological rules? Certainly yes! But the idea is quite simpler!

Call ELEMENT every entity, whether elementary or not, together with an associated TAG!

An example of an ELEMENT: a set of flowers with the name of the person to whom the flowers are dedicated.

And now think of a world of ELEMENTS!

The world now is a collection of ENTITIES, each one with its own TAG. And, moreover, each ELEMENT, IF not elementary, contains other components, ELEMENTS, that is entities, each one with its associated TAG. For example, the

set of flowers is a non-elementary one: it is just made by set of Flowers, each one with its own tag.

Make the ELEMENTS of some scope of concern, proposed by theory or by practice, available to some interested people and, immediately, you will make the common knowledge of that world (scope of concern) available to the interested people, you will make available a knowledge built up by observations (the entities) by the associated observations (TAGS).

Obviously, where ELEMENTS are composed with other ELEMENTS, you will communicate linguistic details (TAGS) associated with observed real entities. In this way, you will essentially communicate the structure of your world together with its content!!

And now: a community is a set of people (extended with their ICT) who accept a common set of ELEMENTS (tags and their tagged entities as well). Again: the development of a community is certainly based on the communication of a set of ELEMENTS and their related structures (composition).

XML is a notation, whether mechanized or not: as a mechanized notation it has been enriched with an extremely large set of tools to manage descriptions, to make them available in various electronic formats, to store them and to associate automatically operations on the stored data or match descriptions.

Slowly, the use of those entities will be made available to people with quite limited ICT competence and with a very limited skill in programming.

## **D- Life Cycles for E-LEARNING**

A life cycle should be the consequence of a set of ontological foundations. But, certainly, it has to be strongly related to the real best or good practice in e-learning reality as well as in its design.

XML is certainly the best available tool to describe all aspects of the e-learning world that can be subject to documentation.

The acquisition by a community of the ELEMENTS related to the field of e-learning is a basic approach to make abstractions related to that field. And those abstractions will be subjected to XML descriptions (as non-elementary ENTITIES). Connecting all the abstractions of the field is one of the basic aims of XML as applied to e- Learning.

There is no need detailing the idea. In fact, all aspects can be subjected to descriptions, and, hence, to XML formalization, and, as a consequence, to a common evaluation.

So concepts related to: presentation, structuring a subject matter, structuring a subject, etc., can be made formal and common without losing their origin or their originators (here TAGS have an other important role: to establish Intellectual Property or origin about concepts as well as implementations).

## **E- HOW to coordinate**

It is simple: connect all experiences about the use of XML in a web site based on XML). Build up a common space name, where tags and tagged entities are collected together and made reusable.

Develop a research attitude to develop community concepts (without losing the history) and make people discuss.

Certainly you will be able to evaluate quite easily people as well as communities, ideas as well as developments in technology and communication.

Some initial aims have to be nevertheless indicated.

That indication should be addressed to the development of a common terminological attitude.

And this again can be done through an extensive use of ICT technology.

## **F- The technology**

All the above requires a common technological background to make it possible to build up community activities.

At the present state of the art there is a need for an initial big effort to select and improve existing technology.

## **XTEACHING**

We are now in a position to give an abstract concise view of what XTEACHING means.

XTEACHING means teaching (and learning) activity where there is an explicit distinction between what is taught from what is teaching (imagine making a distinction using tags).

For example: Teaching is explanations given verbally by a teacher.

What it is taught is the behaviour of something as presented by a multimedia device.

There are many teaching situations where the distinction is naturally done.

Reinforcing such a distinction makes it possible to develop an attitude such as:

1-The personality of the teacher is augmented with respect to the content (what has to be explained)

2- The distinction makes it possible to adopt contents accepted by a community without destroying the personality of the teacher

3- The consciousness of the distinction is mandatory at the actual state of the art, where teaching is done in the presence of content presented by other sources of the data (INTERNET or other sources)

4- Explanations can be adapted to the classroom or to individual questions posed by the students

5- It becomes possible to develop contents such as publishing author-based products while the teacher is left a primary task: making the contents fully understandable at the lecture time

6. It becomes possible to make the students use the reference materials (contents) and ask them to develop compositions from the reference materials using just ELEMENT selections and rebuilding the considered subjects just as an XML world (of texts, images, moving pictures, etc.).

## **XTEACHING as a theory of teaching**

X teaching as an idea can be used for various purposes:

- a- To build up a model of the teaching process
- b- To build a model of the teaching material
- c- To give an a posteriori model of the teaching/learning process
- d- To introduce the idea of the value of the teaching process as related to the descriptions and metadescriptions of the teaching activity
- e- To model what the invariant in educational as well as pedagogical values in teaching are.

## **Means for XTEACHING**

XTEACHING requires the evolution of the tools required to teach. The distinction of “what” from “how” has to be considered as a system idea. The distinctions are recursive in nature and so the analysis tools or the author tools have to take into consideration such a fractal attitude.

The role of the teacher will be to add explanations (how to) to enlighten parts of speech (parts of teaching). Explanations will be developed before the lecture or in real time at the lecture or will be suggested by another teacher or a student.

The role of the students has to be considered at all stages of teaching and learning; a student will be invited to address questions at various levels of abstraction as related by the correspondent tags.

## **From linear lectures to interactive materials**

Recording students' observations and teacher's explanations during a lecture in real time and associating those data with the tags corresponding to the taught entities makes it possible to reuse those observations and explanations and associate them with the corresponding ELEMENTS (as XML entities). These ELEMENTS become, in a sense, recorders. And entire linear lectures become an interactive document where the students can reuse the recorded data on the basis of their cognitive needs.

## **XML as a science tool**

Collecting data, giving them a tag, counting them, finding relations, searching for invariants, are certainly a way to make science.

**XML can be used just as a tool for science in human as well as so-called scientific disciplines.**

It can be used to taxonomize, to build, to model and so to build up theoretical as well as empirical observations and eventually to compare the two of them.

When collected observations are connected together to model a domain, sometimes the word ONTOLOGY is used.

The field of ONTOLOGY is a hot development today.

Putting teachers to help student in filling structures of knowledge and making them conscious scientists is perhaps the main aim of this project.

(°) Manifesto del progetto XTEACHING presentato a Bruges  
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