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► **To cite this version:**

Philippe Dumas, Yann Bertacchini. INTERNET AND EDUCATION : FOR A NEW PEDAGOGY
Way & means to a territorial human tie up dated ?. 2003. sic_00000869

HAL Id: sic_00000869

https://archivesic.ccsd.cnrs.fr/sic_00000869

Submitted on 27 Dec 2003

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1st INTERNATIONAL CONFERENCE ON HUMAN FACTORS AND THE WEB
'DESIGNING AND EVALUATING FOR THE WEB : METHODS FOR USER BEHAVIOUR
MONITORING'

INTERNET AND EDUCATION : FOR A NEW PEDAGOGY

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Keywords that will help us choose appropriate reviewers for your submission:
Education, internet, pedagogy, competences, new economy, virtual currency,

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Introduction and rationale

The diffusion of internet is not to foresee anymore, it is there. Enterprises, and individuals in particular, are now familiarized with this new media and youngsters develop a new culture that complements and nourish the « new economy». Teaching is also taking this new turn under different names: on-line teaching, distance learning, tele formation, etc.. One can note three factors that are going to sustain the development of « distance learning »(Carton M, Tawil S, 1997) :

-the fading of partitioning between continuing education and first education through the recognition of acquired professional expertise in the academic credits in order to progress professionally (idea of those devices for educational validation of professional competence presently at stake in Europe)

-the redistribution of roles between public and private actors of the educational system, notably the phenomenon of industrialization of the knowledge via the multiplication of merchants offering professional formation.

-the evolution of user behavior (especially youngsters and professionals) that is grounded on a new culture resting on the utilization of on-line communication tools (chat, forum, list of diffusion, etc.) associated to a strong need of interactivity.

These considerations bring us to consider the utilization of internet for education in an optics that is not the one of reproducing the traditional methods but the « coming out » of possibilities offered by this media. Our problematic is centered on three rationales : the potentialities of the internet, the present difficulties of approaches of on-line education, and the key factors of success of a new approach of the on-line pedagogy.

Potentialities of internet in the educational relation

In relation to the question of the transmission of knowledge, the memorization and the storage of knowledge, that took consistence in libraries since origins of the written culture up to data bases of the electronic era, internet can materialize dreams of the curator or librarian: to be able to preserve everything and to be able to access all contents. It notably frees us of the physical limitations of indexing and of the manipulation of supports (paper, film,...), as noted by Altamirano and Sarlo (1994).

At the level of physical communication, internet is multiform. It first permits the point to point access to nearly all places on the earth, like a fantastic traditional messenger. It also permits reach several points simultaneously, like a mass media. Any point can be issuing and/or receiving. Any point can be either center or periphery. There is no hierarchy of broadcast nor receipt. In short by the grace of the digitalization of all supports, it can be « multimedia », that is to say, at present at least, audio and visual media, with or without animation.

At the level of interpersonal relation, internet permits the synchronization of the communication as well as its de-synchronization at a time. By e-mail, chats, forums, lists, etc. it is a creator of a new social bind, the one that characterizes itself by the qualifiers of « virtual » and « interactive ».

With Charlot, (1997), our basic hypothesis is that *the pedagogy supported by internet, the «new pedagogy», consists less in creating contents than creating the conditions of using existing contents.*

The present difficulties of the initial approaches of on-line education

The existing on-line formations place the accent on the bookish knowledge transmission, that we will call « info-formation contents ». It mainly consists in transferring on-line traditional educational supports like books, conferences and the like, at the expense of the traditional social link consisting of the « classroom », the group, the professor to pupil face-to-face.

It follows an elevated rate of student drop out. This rate that corresponds to a rupture of the social contract in the educational system is to compare with rates of failure recorded in other paths of formation, as well in presence (for example on real campus) as from distance (for example the French National Center for distance education).

From then on, the problematic and the necessity to compensate the elevated rate of abandonment (Springer Maurer H, 1995) and the loss of the traditional social tie is to imagine the re-creation of a new social link founded not on the face-to-face and the physical contact of the book, but on the virtual and the interactive.

The key factors of success of an on-line teaching

Several principles must be set forth to orientate the new pedagogy. These principles are not revolutionary when they are taken one by one, but it is their association in a « pedagogic mix » that makes the originality of our proposition.

From a pedagogy of transfer to a pedagogy of accompaniment or...

From the master-to-pupil relation to the counselor-to-learner relation..

In a world that allows generalized interactivity, and a culture of actor's autonomy, the teacher must now see his/her role passing from *directing to coaching*. This new orientation that emerges in other fields of the educational world, is going to push the on-line teacher toward

an activity of pushing the circulation of knowledge and the coming up of the potentialities of learners facing themselves and facing the technology.

The cover of the tree characteristics of competence: knowledge, ability, experience

The educational program is going to organize for the learner a course that is going to make him/her pass by three stages: reactive, then active and finally proactive.

The communication of contents

Media superimpose themselves the one to the others. They only replace partially other media. At the level of present development, nay media must be used in complement of others. Thus, the oral (in the face to face), the mediated oral, the writing (books), the electronic support (digital), the agora are to be used concurrently.

The birth of an original collaborative space

Our reflection positions itself in the field of the cooperative knowledge economy and our proposition moves toward the construction of a collaborative space that associates technological support to a system of mediation.

This collaborative space will assure the task of the virtual agora, a public space where exchanges between learners themselves and between learners and educators will be negotiated, mutually enriched, and concluded.

The underlying rationale is to instigate and to drive:

-the circular movement of the info-formation

-enough competence and the emulation to collectively produce knowledge.

This central idea in organizing the sharing of knowledge concerns learners as well that the educator.

The support for this circular movement of the info-formation and competence is what we call «virtual competence currency». Following the model of free exchange markets whose mission is to permit the meeting of citizens' offers whose objective is not to exchange materials but services, the mission of the «virtual competence currency» is to mediate, to cause, and drive the maintenance and the construction of the new bond between actors of the formation.

The teacher's new competence

At the individual level, the teacher is the first that requires a continuing education about the new tools of interactivity to build up an instrumental expertise. But beyond the re-conception and the assessment of every teacher's individual role, it is also, and maybe especially, the management and the organizational structure of the educational team that must be re-thought, a consideration that calls for new competences in educational management.

Thus, the traditional, sequential and mono-disciplinary carving of teacher services must first of all make room to a redeployment of services taking extensively in counts that « mix » of synchronous and asynchronous actions at work in on-line teaching. More important again, the essential stake carries on the capacity to weld and to enliven a team in a mutual and transverse approach. Teachings will be structured in educational cycles integrating a maximum of multidisciplinary and collective realizations, in a logic of professional project management.

Illustration : a case study of a course « Initiation to 3D on the web»

Educational objectives

Knowledge: conceptual

To understand the notion of point of view
To know concepts, tools, general vision of the offer,
Notion of narration

Ability: Capacity to produce a 3D world

Methodology

To create some simple geometric shapes
Capacity to produce some elementary objects
Interactivity of linear 1° degree (animations)
Integration in a Web navigator

Experience: group working

Profile of integrator
Adaptation to group work
Opening toward actuality

Prerequisites

Mastering the tools

Technology watch

Course outline

At the time when the course is put on-line, to reference in every Session the sites to be explored. Home work is returned by e-mail or by Ftp deposit. Interactions take place by e-mail, forums, Visio conferences. A final sitting is possibly foreseen in face to face.

Session 1 : Discovery

Presentation of the course

Bill book

Historic

Guided discovery of 3D

Exercise 1 : exploration of the web about existing 3D contents; home work : synthesis and verbal commentaries in forum, or Visio conference

Session 2 : Foundations

From usual 2D plan to 3D space

True and false 3D

Orientation in space

Exercise 2 : to manipulate objects through a mirror ; to make of objects simples en sketches three measurements; home work : sketch

Session 3 : Modeling

Construction of a world from a library of objects
Addresses resources
Publisher

Techniques

Ref : Document2

Splines

Primitive (polygonal models)

Meta-balls

Nurbs

Point of view (camera, focal distance, ...)

Exercise 3 : to model an object (a lamp) with software while using to the maximum the standard primitives available in on-line library ; home work : a source file

Session 4 : Animation

Animation by picture key

Inverse kinematics

Exercise 4 : to constitute a hierarchy, to create and to publish articulations; to enliven the object ; home work : animated model in source file.

Session 5 : Texturing

Edition of materials

Creation of texture

Behavior in relation to light

Mapping

Shaders

Exercise 5 : to create and to publish basic materials; to create and to import bitmap textures; mapping of the object ; home work : mapped model in source file.

Session 6 : Color reproduction

Light

Camera

Format of picture

Exercise 6 : to create and to publish light; to adjust shadows; to manage the focus ; to choose the resolution and the format ; to calculate reproduction; home work : still bitmap picture or animation.

Session 7 : « RéaCo » collective Realization

Launching

Exercise 7 : inventory and assessment of the existing 3D applications on the web

Accompaniment of RéaCo

Exercise 8 : to conceive idea, goals, targets, uses, market, competition ; home work : definition of project

Exercise 9 : to develop the idea, to sketch graphically, to validate technically ; home work : script, navigation, technical choices, design, roughs,

Exercise 10 : to organize the multimedia team (agency work); home work : list of tasks including Project file (Gantt, budget, points of control)

Ref : Document2

Exercise 11 : prototypage, evaluation ; home work : prototype, refinement of the list of tasks,

Exercise 12 : finalize version beta ; home work : presentation to the coordinator

Conclusion of the RéaCo

Exercise 13 : public defense

Exercise 14 : debriefing in agency

Web Sites

Course 3D

<http://www.webreference.com/3d/indexa.html>

Course VRML

<http://apia.u-strasbg.fr/vrml/index.html>

http://webhome.infonie.fr/kdo/vrml/f_som.htm

<http://www.essi.fr/~abram/cours/vrml/vrmlclass.html>

On-line help

<http://webhome.infonie.fr/kdo/vrml/dossiers/outils/rotate.htm> (calcul automatique de rotations multiples d'objets 3 D)

<http://apia.u-strasbg.fr/vrml/utile/index.html> (les utilitaires VRML)

Technical Specifications

<http://apia.u-strasbg.fr/vrml/utile/index.html> (Specifications for VRML browsers conforming to the base profile)

<http://www.web3d.org/Recommended/vrml-sql/> (recommandations pour interfaçage VRML et requête SQL)

Tutorial

<http://www.dform.com/inquiry/tutorials/vrmlaudio/> (tutoriel son pour interface 3D)

Portails & exemples

<http://home.hiwaay.net/~crispen/vrmlworks/>

<http://www.stl.nps.navy.mil/~brutzman/vrml/>

<http://webhome.infonie.fr/oryx/virtuel/liens/liens.htm>

Conclusion

Our educational engineering proposition rests on a platform that should not be reduced to a set of technological elements. Considering the reports that we presented at the beginning - especially the high rates of drop outs during formation - we think a solution can be found in a collaborative economy of knowledge. This idea of “sharing” associates educators and learners in the maintenance of a new social bond constructed around the principle of exchanging competence and exploiting the potentialities of internet. To encourage this circular movement of the info-formation it is necessary to both (a) integrate the actors’ adhesion to the formation and (b) create an emulation. This takes in account the behavioral evolutions noted in the learners, especially a need for interactivity which is now facilitated by the implementation of on-line communication tools. We think that our effort must carry on the quality of the script of the formation, and also and especially on the capacity to create team's culture.

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