

DISTANCE EDUCATION AND LONG-LIFE LEARNING

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Abstract:

The purpose of the authors is to share their experience in SME's employees training through Computed Assisted Learning and Telematics Tools. We want to show why training is a need for any company that wants to survive in a competitive market. Then we will give some good reasons for which we think this training must be done using distance learning and explain why telematics tools and multimedia materials should be used in distance learning. After, we want to describe the multimedia interactive courses we have created for this purpose and their integration with telematics tools into a CD-ROM. We also want to explain our experience in testing our software and also using it in real learning experiences. Finally we want to let you know our future working plans.

1. Work Team and Objectives

The authors of the proposal collaborate with *Cedetel* (Center for the Telecommunication Development in Castilla-León), a technological center which main function is the promotion and development of the *Information Society* in Castilla-León (Spain).

Since the projects we develop are interdisciplinary, they are done by work teams that include experts in all the areas that it's necessary and also potential users of the applications being developed, trying to win our objective of building user-friendly applications.

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One of the projects carried out has been a CD-ROM containing different multimedia interactive courses [6] and a user-friendly-graphic environment that incorporates several telematics tools [4]. For this project we have counted on a group of teachers of the Pedagogy College of Salamanca University and a company of our regional environment -Divisa Informatics S.A.-

We want to reflect on the technological change and its influence in the European labor market. We also want to explain the role distance learning can play in the former discussion. Besides we want to describe the learning instrument we have developed.

2. Long-Life Learning

IT (*Information Technology*) is changing our life, but that change isn't good for each and every one of us, although it's if we consider the change globally. For some people, IT means a new PC on their desk that let them access to the best information. For others instead, the change will be more radical, because they will lose their employment. In the short term, this is inevitable.

In a market economy, the company that doesn't incorporate IT, in the short term will protect the jobs of all its employees. However, in the long term, the result could be that all of them will lose their jobs, if the company is sent off the market by others, more efficient, belonging to the same industry that did incorporate IT to their production methods.

The main socio-economic and political trouble in Europe is the high and long-lasting unemployment. Eighteen millions of citizens are unemployed, half of them since a year or more. We have to add nine more million of unmotivated workers that would look for a job if they would have the hope of finding it [1]. However, the weak growth of employment in Europe, and the high and persistent unemployment accompanying it, has its explanation in factors different from the technological change. To say more, inside the European Union, the states in which IT is more developed, also tend to have the higher employment rates [1].

The transition from an intensive-work economy to an intensive-technology economy has resulted in a big mass of structural unemployment, with low or no qualifications. That people need to be retrained so they can compete in the labor market to obtain the new jobs IT creates. The true challenge is that

the persons who were already part of the working population are retrained. Most of the retraining is organized for young people, and not for persons that are already employed or for those that have been unemployed for 10, 20 or 30 years.

All this leads to conclude that European employment politics must be oriented to give unemployed more qualifications. However, in spite of the importance of long-life learning, most countries invest still very few on it. For example, companies in the United States spend about 30 billion dollars per year in long-life learning that affects approximately a 10% of the human capital. It seems a big amount of money, but it isn't compared with the quantity -which exceeds 475 billion dollars- spent for those same companies in infrastructure [4]. On the other side, according to OECD data, workers that have attended any kind of training in the past four weeks represent a 14% of the total in the United Kingdom, a 13% in Germany, a 5% in France and only a 2.4% in Spain [2].

Our work team has developed several multimedia interactive courses and a user-friendly environment, both for regional SMEs (Small and Median Enterprises) workers, which are usually people without technical or specific knowledge about the topics being discussed in the courses. The main reason to focus our effort on SMEs is that these companies usually do not invest in long-life learning. Besides, SMEs ignore what IT can offer them.

It's obvious that long-life learning is necessary but how can it be offered? We can think of two possibilities: *Traditional learning* and *Distance learning*. We prefer the second option. We can not say that a method is better than the other is, but that both are radically different and that due to the characteristics of distance learning and several other circumstances, this is the most suitable. About *distance learning*, several things can be said:

1. It's very flexible, since it makes the learning process independent from space or time
2. It's more constructivist since students reach knowledge through an active learning process. Teacher becomes a background guide, being the pupil the main character in his learning process.
3. It can attend a disperse population.

4. It's especially suitable for adult persons. An adult has an history full of experiences, knowledge..., which allows him to make most of the way on his own. His contact with reality builds the personality in his distance learning [3].

Since the adult that attends long-life learning in a company doesn't need traditional learning and he feels more uncomfortable with it, distance learning is the most suitable method in this case.

We finally want to talk about the economical dimension. Distance learning allows the communication of a certain message, which design and production had a certain cost, to a big mass of students, leading to scale economies that considerably reduce costs.

Distance learning is cheaper than traditional learning. We can show it with a simple comparison for a one-week course (5 hours a day) offered to 10 employees.

Traditional Learning:

Lodging: $10 \times (75\$/\text{night} \times 5 \text{ nights}) = 3750\$$

Food: $10 \times (35\$/\text{day} \times 5 \text{ days}) = 1750\$$

Travel: $10 \times 350\$/\text{student} = 3500\$$

Teacher: $75\$/\text{hour} \times 25 \text{ hours} = 1875\$$ ²

Material: $10 \times 25\$/\text{student} = 250\$$

TOTAL: 11125\$

Distance Learning:

Teacher: $75\$/\text{hour} \times 25 \text{ hours} = 1875\$$ ²

Material: $10 \times 25\$/\text{student} = 250\$$

TOTAL: 2125\$

In the example we can see that costs are considerably smaller in distance learning. Besides, we would have to add the opportunity cost, also smaller in the case of distance learning.

² We consider in both cases the same number of class hours, since distance learning doesn't mean less dedication from teacher to pupils. When distance learning is done using video-conferencing this is obvious. When Computer Assisted Learning is used, it's true that the hours of lessons given by the teacher decrease, but hours that the teacher spends answering pupils' questions by e-mail increase considerably.

We haven't talked so far about the disadvantages of distance learning. However, they exist and it would be a mistake to forget them. As an important disadvantage, we have the lack of interaction between pupils and the teacher and between pupils themselves. Due to this situation, the student may feel isolated and abandon the course.

Interactivity is a key element in the learning process. Multimedia technology and telematics tools (e-mail, newsgroups...), can provide it and allow us to talk about a "virtual classroom".

3. The Design and Refine process of the Learning Instrument

The objective of our learning instrument is that pupils learn about Internet and different telecommunication services. We developed several multimedia courses about such subjects and integrated them into a CD-ROM with *Aula Virtual* (Virtual Classroom) [4]. *Aula Virtual* is a graphic environment that incorporates several telematics tools: some services like Internet-services and some instruments for remote course management. *Aula Virtual* is showed in *figure 1*.



Figure 1: Aula Virtual (Virtual Classroom)

Once we had ready a first version of the courses, we organized a pilot experience in which the pupils were teachers of the Pedagogy College in Salamanca. As result of the experience, the initial version of the courses suffered several modifications: images, animations, text, content level... Besides we wrote a document with a series of advice for elaborating multimedia interactive courses, some of which we expose now:

1. It must allow the user decide at which speed he wants to learn. The objective is that the user doesn't feel controlled by the application, but the opposite.
2. Simple is best. The message is still the important, so we shouldn't abuse of multimedia elements.
3. The text must be brief -it shouldn't take more than a third of the screen [5]-.
4. Size and font style must be used to show a hierarchy.

5. In the animations in which the application presents the text gradually, a suitable time sequence must be used. In any case, a button that allows to repeat the whole animation should be included and if the animation is long, it should be divided in parts that are presented at the student's demand -clicking a button...-.

The instrument done was good from the technological and pedagogical point of view, but what about the point of view of the real user? Who were going to be the users of our product? Obviously, teachers that use the instrument to support its activity and students who attend those courses. For this reason, we elaborated an evaluation method based on two questionnaires, one for the teachers and the other one for the pupils, in order to evaluate the tool.

The CD-ROM has been used in a course about Internet and telecommunication services attended by 40 workers of regional SMEs. This course has been held in Cedetel in September and October in 1997 and both teachers and students have done the questionnaires. SMEs workers have been also asked about their opinion about long-life learning and computer assisted learning. All this information is been analyzed.

4. Future Projects

Another important experiment is on going. The CD-ROM is going to be used in a course about New Technologies in Education attended by about 60 students at Pedagogy College of Salamanca University. We will be able then to compare the behavior of SMEs workers and university students using the CD-ROM.

Finally, we are developing a Virtual University, which offers some more generic services.

5. References

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