Evaluation of different eLearning Techniques used in Vocational Training within
Leonardo da Vinci European Program.
The Romanian Case Study

Mihai Caramihai, Irina Severin
University POLITEHNICA, Bucharest, Romania

Abstract — The Leonardo da Vinci European Program contributes to the implementation of the vocational training policy for the Community, which supports and enhances the actions of European countries. Its aim is to promote new practical approaches in vocational training procedures (measures). The global necessity is to raise the quality, innovation and European dimension of vocational training systems and practices by means of transnational cooperation and modern techniques. Hence, the main challenge is how to use the advantages of digital communication technologies, and eLearning systems, and how to integrate them with the traditional vocational training. The aim of this paper is to present the European context of vocational training approach using eLearning techniques within the Leonardo da Vinci Program, and moreover to illustrate the Romanian place inside the field – in particular through Romanian projects. An evaluation of eLearning pillars of web site and eLearning courses design will be presented and the general gain of the eLearning vocational training context will be determined.

Index Terms—VET (vocational education and training), European financed project, assessment, e-learning components

I. INTRODUCTION

The role of technology in the vocational training field delivery has been truly explosive. Opportunities to receive coursework via the Internet exist routinely at most training centers while the opportunity to pursue an entire degree program is becoming a reality at more and more institutions worldwide. The wedding of technology and vocational training is set, and it has appeared to enjoy certain longevity.

However, despite all of the economic promise, the convenience and expanded accessibility, few researches have been carried on concerning the quality of educational opportunities that Internet-based distance learning presents. While there are several studies [1], [2] examining telecommunication based courses versus traditional formats, there is very little data concerning the delivery of distance learning in one of the fastest growing modes today: over the Internet.

As vocational training teachers struggle to determine how to use new technologies appropriately, they must grapple with understanding the advantages (and disadvantages) of traditional, in-classroom activities versus taking those activities online. This is especially true for the conduct of class discussions and interactions, where vocational training centers might choose between in-class discussions or online threaded discussions (the issue of chat discussions is not included as eLearning technique). At least two questions need to be answered for centers to make good decisions on which tactic to use and when:


- what are the differences between face-to-face vs. online discussions / interactions and which setting might be better for which learning objective?
- what evidence exists that higher-level thinking occurs in online discussions?

Moreover, the matter of mentality changes of teachers / trainers versus trainees should be not avoided for a deeper analysis.

II. THE LEONARDO DA VINCI EUROPEAN PROGRAMME

The Leonardo da Vinci Programme contributes to the implementation of a vocational training policy for the European Community that supports the actions of Member & Associates Countries. The European Council (EC) has politically adopted a second phase of the programme for the period 2000 – 2006 by the Decision 1999/382/EC. Its aim was to promote new practical approaches in vocational training policies in the Member Countries.

According to the provisions of the Council Decision above mentioned, the period 2000 – 2006 was covered through three calls for proposals, respectively: 2000 – 2002, 2003 – 2004, and 2005 – 2006. The particular objectives of the Leonardo Programme, as established by the EC were:

1. To improve the skills and competencies of people, especially young people, in initial vocational training at all levels;
2. To improve the quality of, and access to, continuing vocational training and the lifelong acquisition of skills and competencies with a view to increase and develop adaptability, particularly in order to consolidate technological and organisational change;
3. To improve and reinforce the contribution of vocational training to the process of innovation, with a
view to improve competitiveness and entrepreneurship.

In the same time, the specific measures linked to the Programme can be structured as following:

- Procedure A: Mobility
- Procedure B: Pilot projects (PP), including Language competences (LA) & Transnational networks (NT)
- Procedure C: Thematic actions (TH), Reference materials (RF), Complementary Actions

Our focus of the current study has considered procedure B projects, in particular pilot projects. Pilot projects are intended to stimulate the process of innovation and to enhance the quality of training and vocational guidance. They develop tangible products, using new information and communication technologies where appropriate.

Moreover, the pilot projects have demonstrated their transnational nature and their added value for national vocational training policies. Hence, pilot projects have provided a justification regarding the training need they have had identified and how the Leonardo da Vinci grants were used to develop and disseminate innovative training approaches or to improve the skills of target groups.

To monitor pilot projects, five topics were identified according to the first call priorities and the Commission’s current political priorities as regards vocational training. European thematic monitoring activity comprises the following themes:

- theme 1: integration into the labor market
- theme 2: developing of skills within companies, particularly SMEs
- theme 3: adapting of the training supply and new training methods; the quality of training
- theme 4: transparency, assessment and validation knowledge
- theme 5: e-learning

Our study has been based on the Romanian promoted pilot projects targeting eLearning or developing, among other tangible training outcomes, eLearning, too. These projects are characterised through important transnational cooperation and expertise component, so even if the considered case studies projects were strongly supported and coordinated by Romanian organisations, the European state of art and tendencies in eLearning in European context might be noticed, too.

III. ASSESSMENT OF ELEARNING RESULTS

Once implemented, the projects are assessed on the basis of the final report submitted accordingly the rules fixed by the financing unit. The General Directorate for Education & Culture of the European Commission, responsible, among other European financing initiatives, for the Leonardo da Vinci Programme, has established a set of results/outputs assessment indicators. Among these descriptors, one might select / adapt those appropriate indicators for eLearning resources, as pilot projects results / outcomes, as follows [4]:

- Communication & used media – quality of interaction between material and target group / course participant, choice of media with respect to the content, stated objectives and target group / course participant, pertinence and integration with respect to specific features;
- Evaluation – assessment criteria and procedures, ongoing and final assessment tests, quality of feedback with respect to answers to self-assessment questions, measurement of pathway target group / course participant level of satisfaction (presence of activities aimed at assessing pathway target group / course participant satisfaction, presence of activities aimed at assessing qualitative dimension of course teaching staff or of ODL’s pathway tutors);
- Technology
  1. audio-video support: material organisation (credits, modularity, passage from one module to another), aesthetics (image definition, shot, montage, audio definition, synchronicity / complementarity between sound and image);
  2. electronic support: material organisation, aesthetics (image definition, image composition, rhythm of images, audio definition, synchronicity / complementarity between sound and image, technical quality of drawings / photographs / graphic animation, quality of typography features and text readability, use and features of reminding symbols), ergonomics and use of media, produced information etc.

IV. ANALYSIS OF ELEARNING COMPONENTS

In accordance with the quality criteria and regulations established in frame of the Leonardo da Vinci Program, a number of pilot projects with Romanian promoters were financed, respectively 8 projects during the 2000 exercise, 6 projects during 2001, 2002, 2003 and 2006 exercises, 3 in 2004 and 2 during 2006 exercises. The analysis of eLearning components will map out with the four pillars defined in [3].

Learning goals and content presentation

The identification of the learning goals and objectives offers the basis for the design, development, distribution, and assessment of an eLearning system. Hence, the defined goals serve as an accord between the trainer and student, defining what is to be transferred from the first one to the second. Of course, communicating these learning aims is the first step forward in assuring a valuable (e)-learning experience.

Learning goals should be defined as part of the training design plan; moreover, specific teaching activities should be directed towards providing learners with the necessary skills, knowledge, or experiences to meet the course’ goals and objectives.

In order to identify courses with learning goals and content presentation, all project web servers were searched for relevant course. Hence, out of 63 IT courses (i.e. the maximum number – 28, in 2001, or an increasing, then decreasing tendency in the concerned assessment period) have online course content presentation and a description of learning objectives (see Figure 1). One question has aroused: should we notice as problematic the diminish to zero of the vocational training tangible results, or moreover one might consider that being focused on innovation, the first generation of projects developed certain final results containing e-learning to appear as majority in the last ones.
Interactions

Generally speaking, new information is acquired whether students interact with a teacher or with one another. Such interactions form the learning time / space structure of the student’s community and are valuable methods to acquire new knowledge. The challenge for distance educators is to design an e-learning environment in order to establish, maintain and develop the (e)-learning time / space structure between students separated by space and/or time.

Following the analysis of this kind of criterion, the results are depicted in Figure 2. We can notice that the percentages of web site and course interactions have a balanced distribution in the first generation of projects, to decrease in the last financing exercises, meaning that in the context of more and more e-learning results there is still place for interaction improvement.

Assessment and measurement

In opposition with the classical learning model related to space & time restrictions, in a distance education model, the knowledge assessment and measurement become more critical, due to the absence of the face-to-face interactions, which allow trainers to estimate student response, and progress towards learning goals. Hence, the creativity in the design of student knowledge assessment (within the eLearning framework) represents the sharp criterion for further development of distance education structures.

In this case, similarly, a balanced distribution is noticed. This might be due to the recommendation of the financing instance to draft the results accordingly to the identified needs of the target groups and then, to assess the impact of these deliverables on the target group. Moreover, as part of a sound project management, in certain cases the results testing and feedback analysis is taken into account to adjust the deliverables content (see Figure 3).

Learner support systems and services

Among the most important components in the design of eLearning programs are those that set up the organizational and administrative infrastructures to ensure that such programs can be developed, managed, and implemented. Hence, the learner’ support systems must be complete, rapid to respond, and student-oriented. In a lot of cases, these services are the only link the learner has with the teacher or with the learning institution.

In this particular case, the majority has reflected the criterion lack of fulfillment. Reiterating the previous pillar comment, the recommendation to highly orient the project draft and subsequently its’ implementation towards the identified target group hasn’t been reflected in the reported situation, so more importance on infrastructure and systems to support the tendency of replacement of conventional training with e-learning based one should be paid on.

Finally, a global evaluation had been completed (Figure 5) regarding the accomplishment of all four pedagogical requirements linked to on-line course development. It appears from this case study the tendency towards a balanced distribution.
Figure 5. Global analysis of pedagogical components:
- Online final results with all criteria fulfilled;
- Online final results without all criteria fulfilled

V. CONCLUSIONS

Taking into consideration the analysis of the eLearning components one might notice a decrease tendency from a year of selection to another and in a certain extend some unfulfilled criteria based the identified pedagogical pillars.

Our first reflection input following this assessment was related to whether the study was too ambitious or whether we expected too much from this specific case of European financed projects, the Leonardo da Vinci pilot projects. We are tended to conclude that regarding the pedagogical components of eLearning, the Leonardo da Vinci projects explored some new pedagogical methods, but, despite the extend of e-learning as learning developed innovative products, a huge demand for improvement appears into this field.

On the other, the continuous decrease of the project number and financing might explain to a certain extend the decrease tendency noticed into criteria fulfillment. Considering the approved pilot projects for the 2003-2006 exercises, some progress based on the current pillars should be expected for the on-going projects in terms of more customers oriented, more user-friendly, but still not interactive enough and supported by learning services systems.

Anyhow, despite of the administrative aspects of the financing instances current activities, this in-depth assessment might be considered as a research component to improve the supporting policies in the European context in order to better promote e-learning and to better position it as reported to conventional training.

REFERENCES


AUTHORS

Mihai Caramihai is professor within the POLITEHNICA University of Bucharest and expert within the National Agency for Community Programmes for Education & Vocational Training, Bucharest, Romania (e-mail: m.caramihai@ieee.org). He is responsible for the pilot projects accompanying cycle and final assessment.

Irina Severin is professor within the POLITEHNICA University of Bucharest and expert within the National Agency for Community Programmes for Education & Vocational Training, Bucharest, Romania (e-mail: irina.severin@anpcdefp.ro). She is responsible for the coordination of quality assurance, monitoring, audit and assessment.