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ICT COMPETENCES ACQUISITION USING THE CONCORDE E-LEARNING PLATFORM

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Abstract: This communication presents some of the final results obtained in the frame of the EC funded Leonardo da Vinci pilot project with the title "Acquisition of Complementary Competencies through Open and Distance Education" (CONCORDE) and it complements other dissemination papers. Mainly, we focus here on the acquisition of the competences in the information and communication technologies using an innovative pedagogical model implemented at the level of the web platform. The targeted competences respond to the training needs identified in the first stage of the project. A web platform developed at Technical University of Cluj supports on-line training material organisation via web interfaces and open access to training resources through personalized interfaces. Evaluation tools, additional training resources and communication facilities, such as forum, are an integral part of this electronic platform. Some of these final results are outlined and disseminated in this communication.

Keywords: ICT skills and qualifications, e-Learning platform

I. INTRODUCTION

To be successful in the European economy, the workforce must have up-to-date vocational skills relevant to the needs of employers. Information and Communications Technologies (ICT) can provide a flexible and convenient solution to the constraints of time, cost and access to training. Similarly people with outdated or inadequate skills can find difficulties to re-enter the labour market. Knowledge acquired in the formal education system, on the job or in a more informal way, is the key for everyone to controlling their future and their personal development.

Based on a training need analysis survey realized by seven partners at European level in what concerns e-competences, a training network is functional now and it is able to offer informal education in the areas corresponding to the partners' background: business administration, information technologies (ICT skills at basic and high level), plastic materials. The approach implements an e-Learning-based model which consists of the following key elements: definition of an informal training network that is trainee centred, the application of "learning by doing" principle when developing and studying the training material, flexible and customisable delivery of content, technological implementation of an pedagogical model based on spiral development of educational material (planning, implementation, evaluation), a web-based platform that supports both on-line content creation and running of learning campaigns [1][2].

The pedagogical innovations refer to different aspects related with: training network definition, criteria to develop educational materials suited to informal learning, a specific model for creation and management of materials which considers an on-line assistant, establishment of quality evaluation criteria.

From the technological point of view a web-based platform has been developed and it offers a set of complex tools for content creation and management, running training campaigns, allow self-learning and collaborative learning. The training material was developed to assist trainees in acquiring practical skills needed for complementary competencies and for employment purposes. It allows self-paced learning in a flexible way.

The acquisition of ICT skills is addressed with respect of life long acquisition of competences through informal learning and they are related with the use of ICT to help individuals to enforce their capacity of knowledge development, to increase their adaptability to new market situations, to allow in-service education and to enhance the learning situation in an integrated approach as presented [3][4].

II. TARGETED GROUPS

The project addresses its results to a broad category of people in order to improve their skills and to pilot innovative technological experiences in using Open Distance Learning (ODL) materials on a web platform. The main target groups are:

- people that need various competences, different from those of the field they were trained or to update the current skills to new market situations
- students and graduates needing complementary skills, especially those related with digital competences or Internet Technologies
- unemployed or disadvantaged people
- managers and clerical staff
- people from plastic industry
- administrative and docent personnel from schools
- workers from SMEs
- people from public administration

III. PEDAGOGICAL MODEL AND THE WEB PLATFORM

The pedagogical model (Figure 1) is technologically integrated on the web platform and the its main features are as follows:

- acquisition of competences in a constructivist paradigm
- the model assumes a cyclical process in a spiral approach
- stages: planning, implementation and evaluation
- training for future working opportunities
- promotion of active attitude, responsibility and interactivity
- educational environment depends on the technological settings
- both expert-learner evaluation for adaptation and quality control

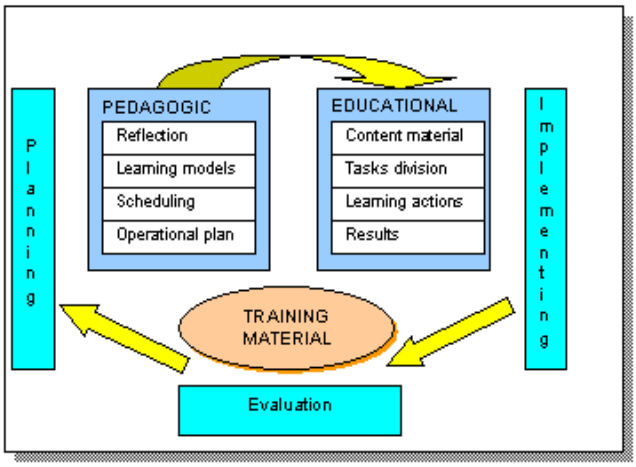

Figure 1. The pedagogical model in "CONCORDE"

To ensure the quality of the pedagogical model, a set of 10 "tips" have been adopted for quality control just from the designing of course content: 1) to establish concrete objectives, 2) to define criteria for evaluation, 3) to design a case of real life for problem solving, 4) to present strategies and recommend steps to solve the tasks, 5) each objective should be mirrored in a set of learning activities and tasks, 6) difficult tasks are divided in subtasks, 7) utilize contextual help (documents, tools, suggestions, readings, consultation, etc), 8) the format of the material could be text, glossaries, video,<audio, animations, simulations, etc., 9) promote collaborative tasks and stimulate communication, 10) respect authors rights and intellectual property rights [3].

The main characteristics of the web platform (www.concorde.utcluj.ro) are:

A) A web platform for competence acquisition

- training materials in: Information Technologies at basic and high level, Business Administration and Plastic Materials
- several ICT-based support components: educational management, educational support, statistics and control, communication center, resources
- automated on-line wizards for: course, modules and unit management, assessment instruments via computer assisted questionnaires
- time planning of the material delivery
- databases with training material, users progress and general resources [4]

B) Modelling and formalizing the content through an automated assistant

- an integrated approach for creation of materials and e-Learning platform (Figure 2)
- a customizable on-line wizard for generation of content and training situations
- integration of the pedagogical into the technological support
- required competences are covered by a sequence of training modules (Figure 3)
- each module comes with: training units,additional resources, assessment (Figure 3)
- integrated tools for quality control and analysis of training progress (Figure 5)
- continuous and on-line adaptation of materials and quality improvement

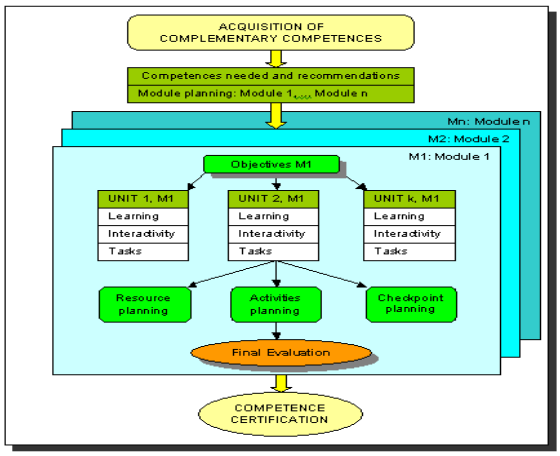

Figure 2. Modelling the content of the modules

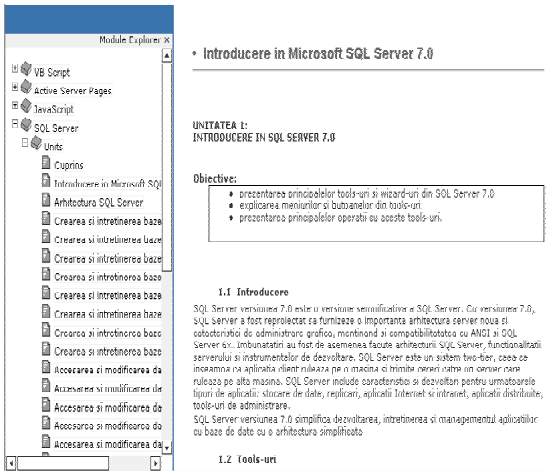

Figure 3. Practical implementation of the study model

Figure 4. Learning facilities on the web platform

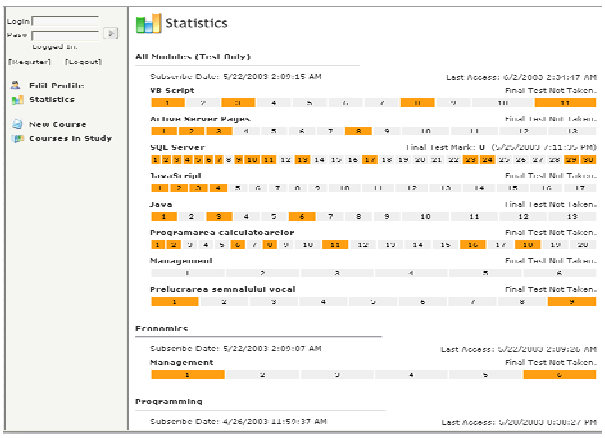

Figure 5. Analysis of the learning progress per unit

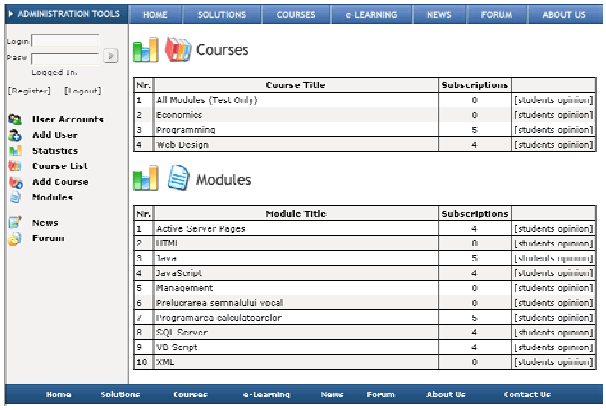

Figure 6. Statistical reports for the administrator

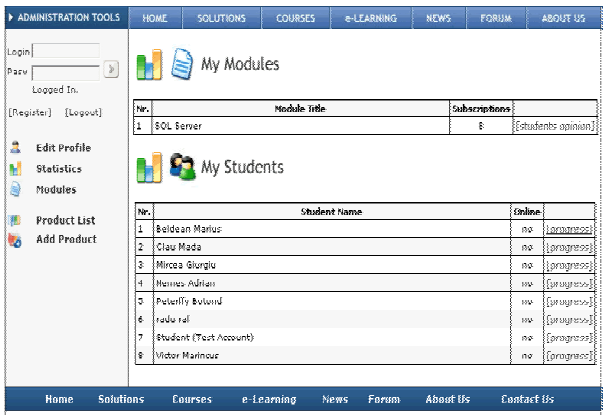

Figure 7. Statistical reports for the instructor

IV. ON-LINE MATERIALS AVAILABLE FOR ODL ON THE WEB PLATFORM

The training materials are available in different forms: on-line, printed or on the CD version. Most of them are open accessible on the web platform, after a registration process. They are structured by the main following areas (in the brackets is the institution responsible for production of corresponding material):

Internet Communication: Introduction to training, Information and Communication, Basics of Internet for schools.

Basics of Computers: Basic Computer concepts, Windows basic and intermediate, Word Processing, Spreadsheets.

Computer Programming: Computer programming in C, Programming with Java.

Internet Development: Interactive HTML. Web pages Development, Basics of JavaScript Programming, Interactive Guide for VBScript, Introduction in XML Technologies, ASP- Competences in web development, Mastering SQL Databases skills.

Business Administration: An introduction to costing and pricing, Selling – a professional approach, Basics of management, Introduction in Marketing, The business plan, e-Commerce.

Multimedia: Speech compression for multimedia.

V. CONCLUSIONS

The acquisition of ICT skills is based on an approach that implements an e-Learning-based model consisting in the following key elements: definition of an informal training network that is trainee centred, the application of "learning by doing" principle when developing and studying the training material, flexible and customisable delivery of content, technological implementation of an pedagogical model based on spiral development of educational material (planning, implementation, evaluation), a web-based platform that supports both on-line content creation and running of learning campaigns. From technological point of view, the web platform allows a great flexibility in on-line material uploading via automated assistants for: modules creation, on-line evaluation instrument, statistics, communications tools, etc. All these tools are easy to use both from student and trainer part and allow flexible and personalised acquisition of competences.

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