



MODULAR E-COURSE WITH VIRTUAL COACH TOOL SUPPORT

1ST COACH BOT NEWSLETTER
FEBRUARY 2009

Welcome to the first COACH BOT project newsletter. The Newsletter Issue 1 is part of the informative material concerning the aims and activities of the project and it intends to disseminate and promote the main project outcomes.



COACH BOT aims and objectives

The answer of over mentioned needs could arrive from a new way of thinking on online teaching / tutoring matched with the designing of a personalized learning path.

The project aims at designing a new model of adult distance education, addressed to professionals of home care health services, based on a e-learning methodology that combines the conversational agent technology (chat-bot) with an ad hoc designed modular learning path.

A new on-line professional, the Virtual Coach to support the participants “individually” inside the modular e-course. This methodology offers a lot of features that can provide a suitable solution to over mentioned lack and target group needs:

- EASY TO USE/USER-FRIENDLINESS. By using only natural language, the Virtual Coach doesn't require that the user learns the meaning of icons or functionalities of menus. This user-friendliness allows learners to concentrate on the contents to learn; besides it opens the system also to people not used to PC and learning management systems like, for example elders and people who have never before used it.
- ADAPTIVENESS. the Virtual Coach can adapt to the specific student profile. But the adaptive character of the Virtual Coach is also related to its dialoguing nature and applies to all the functionalities described. The Virtual Coach isn't a fixed medium like a book, a web page or a multimedia learning object but provides different contents to specific questions by the student. It is thus possible to adapt the learning process thank



to the modular path designed to specific workers needs as well as within the single learning object.

- **CONSTANT PRESENCE.** The Virtual Coach is always online, available to help the learners, teaching and dialoguing. This availability is particularly relevant for working students who will have the chance and freedom to select in this way the best times for studying and learning.

- **MOTIVATION.** The Virtual Coach can give emotional support to the learner motivating him/her with friendly chit-chat times. In this sense, it acts as a personal teacher, coach or a peer that can manage also the "blue and boring" moments of the learning process.

The COACH-BOT Virtual Assistant will provide:

ongoing presence;

ongoing availability;

support and motivation;

a learning path adapted to user needs (to give the opportunity to provide a high level of interactivity and personalization in the e-learning sessions);

help and suggestions on the lessons;

specific and in-depth information and/or explanations about lectures topics;

assessment on the student's education course and management of dialoguing lessons chatting on content slides;

case studies presentation in the form of short narrations using the interactive storytelling approach;

simulation, through a sort of role playing game, of specific learning situations;

student assistance on the technical usage of the Learning Management System and the Learning Objects available in online courses.





COACH BOT Target group and beneficiary sector

The e-learning path will be addressed to professionals of home care services, in particular for older people, focused on medical and psychological issues, national health laws, social and ethical aspects of medical home care assistance.

The new EU Health Programme (2008-2013) of the Department of Health underlines the importance of social health care.

Healthcare is a massive enterprise that needs massive resources. Between 1997 and 2005 spending on the healthcare doubled. Cash is only a solution to health care problems if it tackles the skills of the people who spend and use that cash.

The health care system is a set of integrated services and interoperating teams. The skills base is very broad and training is needed across the entire range of job types, from consultants to cleaners.

Training has therefore become an acute problem in the health care system largely because: skills shortages at all levels, lack of IT infrastructure, huge increase in recruitment, reorganisation, duplication of effort.

The current system for the delivery of knowledge and training is now too slow to cope with the change. One potential solution to this problem is more use of technology based learning.

The medical sector is ideal to exalt the potentiality of Virtual Assistant and Coach methodology because could help to solve main problem of the training in the health care system by providing:

- changing attitudes to learning;
- reducing costs while increasing use;
- demonstrating training function can add real value;
- better accessibility to training opportunities;
- flexibility;
- supporting installation of new IT;
- individual development/sense of achievement;
- improvement of specific skills ensuring compliance.





COACH BOT Technology

A chatbot (or chatterbot) is a type of conversational agent, a computer program designed to simulate an intelligent conversation with one or more human users via auditory or textual methods.

A chatbot is a program that can chat in natural language on topics related with its knowledge model. The first chatbot was ELIZA, a Rogerian therapist, designed in 1966 by Joseph Weizenbaum. The great success of ELIZA compelled many AI developers to create smarter and smarter chatbots that are able to discuss on different topics with the goal of passing the Turing Test: this goal means that the chatbot has to be able to chat on many (infinite) topics exactly like a human can do.

With a different approach, many researchers develop systems and languages able to manage a task-oriented dialogue. The results, presently quite successful, are linked, for example, with VoiceXML and the answering machines.

Recently, many AI researchers tried to create chatbots capable of having a conversation opener than the task-oriented approach and closer than the universal knowledge linked with the Turing Test oriented chatbot. These chatbots can be called domain-oriented.

A domain-oriented chatbot is able to understand and to speak about a specific knowledge domain with a realistic, mixed initiative, human-like behaviour. But outside the specific knowledge domain, the dialogue with the chatbot is useless.

Example of domain-oriented chatbots are a Hans Christian Andersen museum guide and many commercial virtual assistants used to provide information or help during the online selling process.

During the last ten years, it has been possible to follow the growth of two other research fields related with AI: narrative intelligence and intelligent tutoring.

Narrative intelligence is the field of study that tries to mix the artificial intelligence approach with the narrative analysis and creation (storytelling, structural analysis, narrative agents etc.).

An intelligent tutoring system (ITS), broadly defined, is any computer system that provides direct customized instructions or feedback to students, i.e. without the intervention of human beings.

The present research tries to mix these fields to enhance the e-learning effectiveness and attractiveness.



This research will use open source technologies and standards. The chatbots' brains will be developed by AIML (Artificial Intelligence Markup Language): a XML standard used to create chatbots.

To interface the chatbot to the learning systems and the humans, the research will start from open source AIML interpreters that will be modified to manage different data (for example students' curricula) and algorithms (for example a Rules Based System or a Case Based Reasoning System).



COACH BOT kick off meeting

The 20th of November 2008 the COACH BOT kick off meeting start in Rome. During the meeting the project coordinator (FOR.COM.) has been shown the Project Work Packages description.

Ms. Susanna Correnti has introduced the activity plan (work packages and tasks) with description of main activities, deliverables and deadlines. More in depth:

WP 1 Management

WP1-T1 Operative, financial and administrative project management; WP1-T2 Organization and holding up of plenary and virtual meetings; WP1-T3 Monitoring and reporting activity

WP 2 Needs analysis and design of COACH-BOT methodology

WP2-T1 Needs analysis; WP2-T2 Design of COACH-BOT methodology

WP 3 Technological Design

WP3-T1 Design of COACH-BOT platform; WP3-T2 Design of Virtual Coach; WP3-T3 Integration of technological architectures

WP4 Production and e-course development

WP4-T1 COACH-BOT platform; WP4-T2 Virtual Coach; WP4-T3 Modular e-course contents

WP5 Experimentation

WP5-T1 Control group session; WP5-T2 Experimentation group session

WP6 Quality and evaluation process

WP6-T1 External evaluation; WP6-T2 Evaluation of COACH-BOT methodology; WP6-T3 Follow up

WP7 Exploitation



WP7-T1 Promotion; WP7-T2 Project "multiplication" events ; WP7-T3 Exploitation Agreement

WP8 Dissemination

WP8-T1 Paper strategy; WP8-T2 Internet strategy; WP8-T3 Event strategy.

Mr Botturi (Seed Association) underlined the importance of the two groups involved in the project experimentation (experimental group and control group) to evaluate the Virtual Coach potentiality to preserve the learners motivation during the learning path.





MODULAR E-COURSE WITH VIRTUAL COACH TOOL SUPPORT

2nd COACH BOT NEWSLETTER
OCTOBER 2009

The Newsletter Issue 2 is part of the informative material concerning the aims and activities of the project and it intends to disseminate and promote the main project outcomes.



The European context of home health care assistance

The “*Need analysis report*” has been published on the project web site (www.forcom.it/coachbotproject). The need analysis has been undertaken in each partners' country (Italy, Denmark, Slovenia, Romania, UK, Switzerland) and in Croatia.

The need analysis has been carried out through a desk research, which consists of a comparative study of the European literature, case studies and best practices. In addition, it has been interviewed two health care professionals in each country to collect information on the project target group characteristics, the health care context main lacks and the main characteristics of the training offer and needs of the health care professionals in target countries.

A great part of the staff that is taking care of old people and sick or handicapped people in their homes in Europe are people with a low educational background. This conclusion can be made from the research results presented in this report. Also professions with medium and higher education such as doctors, psychologists, nurses and physiotherapists are employed in elder care but with more specific tasks than the ordinary home care giver.

The target group of the home care professionals is complex. They work with elderly people, adults with disabilities, people who are terminally ill or have chronic diseases (physical or mental), people in need of rehabilitation and any other persons in need of care.

The level of knowledge of the English language and the level of computer literacy among the home care professionals in the above mentioned countries differ from low to medium. Professions demanding only a low level of education, offering low salaries and having low social



status are in all Europe normally dominated by women. On this background it is not surprising that home care is a profession for females.

Apart from being a woman with a short or with no education the typical European home caregiver is older than 40 years.

The reports from the seven European countries give a clear picture of a profession where you have to face a lot of different problems during your working day. The caregiver must know how to work with people with specific diseases and handicaps - including blind and deaf people - people with physical problems after for example surgery and people with psychological problems and alcohol problems, people with dementia. She must every day handle to be working in another person's private home - sometimes with this person's relatives around her. She must be able to evaluate the patient's situation and changes in this situation and to communicate this to her/him. Besides the profession is characterized by lack of resources and staff - you are overloaded with work and have too little time available for each patient/client - and also for participating in training. There is also a lack of contact with colleagues as the caregiver is often working alone and there is a lack of professional and psychological support and clinical supervision.



The results of the training needs analysis

As already concluded the educational level of home care professionals is not high and consequently there is a need for in-service training. This is common for all countries in the seven countries where the research was carried out but the reports show that the opportunities of in-service are very different in these countries.

In *Denmark* the home care staffs that have the social and health care helper education - that is the required minimum to work in home health care - are regularly offered a wide range of in-service courses related to home health care. The contents of the courses are constantly updated according to the development at the labour market and in science and technology. There is however a need for web-based in-service training.

In *Italy* there are good opportunities for in-service training for doctors, nurses and physiotherapist but these opportunities are not offered to the less educated social workers and care workers. Research carried out recently in Italy shows that there is a need to be better at managing the relationship with patients/clients i.e. to learn about assertive and emphatic communication - not only with old people, persons with different disabilities and dying people but also with their family and relatives. Besides there is a big need for training on the professional role of the caregiver and this is also the case among better educated staff such as nurses.



In Romania there seems to be good opportunities for in-service training for the social assistants and medical assistants, provided by academic staff, but this seems not to be the case for the less educated home caretakers.

In Slovenia and Croatia formal in-service training for health care professionals does not exist at all. Some informal training led by more experienced workers does exist in both countries to a small extent, however, and in Croatia knowledge about home health care is *part* of the curricula in one of the courses of the nurse education. There is a big need for training in communication with people with disabilities, especially blind and partly sighted people and people with hearing disabilities, with elderly people and with dying people and their families.

The UK is the only country (among the seven countries mentioned in this report) where there is the National Vocational Qualification (NVQ). An NVQ is a qualification which demonstrates an individual's ability to do their job effectively and efficiently. These comprehensively designed NVQs at each level achieve a qualification that satisfies UK government requirements. Training is mainly on the job and assessment is directly related to an individual's performance at work, this is undertaken by an NVQ assessor.

In Switzerland specific in-service training is offered when a specific training need is detected among professionals or if new instruments or methodologies must be explained. In addition the professionals' organisations offer psychological support meetings and seminars to discuss ethical or motivation issues. There is a need for training in handling the relationship with people with special needs and with the families and relatives of the patients/clients. Besides psychological support and possibility for experience exchange with peers is in demand as staffs working in home care seldom have the possibilities to interface with colleagues.



The training methodology

The COACH BOT methodology (*"Instructional Design handbook"* www.forcom.it/coachbotproject) has been designed on the basis of the Pedagogical Agents technology. Pedagogical Agents are autonomous software systems, realized with AI-Artificial Intelligence, methods that can operate in the training environment as tutors or facilitators who adaptively assist users in performing training tasks.

The COACH BOT virtual assistant will act with different roles within the e-learning platform: as *tutor, teacher, technical assistant, mentor*. The innovative e-learning methodology also includes the designing of a "personalized" learning path, presented and supported by the virtual assistant, for each student according to his/her own profession, experiences and work needs.

The first time that the student will access to the platform will be interviewed by the Virtual Assistant. The user begins to be familiar with the virtual agent who starts a friendly conversation



to create a sort of empathetic relationship. The final goal is indeed to define a professional profile and consequently a learning path that fit better the student.

After the guidance interview the student is allowed to access the exercise area of the E-learning platform. The system presents the user as many quizzes as the number of modules foreseen for his/her learning path. These exercises have to be considered as start up quizzes in order to test the initial knowledge of the student concerning topics presented in the course.

Three learning objects (audio/video lessons) have been produced for each module and for each learning object the system will ask the student three questions, that means 9 questions per module have to be answered. If the student will answer correctly to all the 3 questions concerning a particular topic, the corresponding learning object is optional, otherwise mandatory. A customized learning path is then provided, taking into account the previous knowledge of a student: *mandatory* for the topics not well known and *optional* for the ones where the user is comfortable.

Throughout the entire course duration the Virtual agent will assist the students providing them several services such as:

- Help Desk area is to provide the user a detailed help on the web platform functionalities or tools. By using only natural language, the meaning of the different functionalities are well explained by the COACH BOT if a student asks for help. This user-friendliness allows learners to concentrate only on learning the course contents and allows people who are not experts in using a PC and/or learning management systems to effectively use the system.
- In order to maintain learners motivation the COACH BOT interacts with each learner during the entire course duration in different ways, providing ongoing verbal feedbacks on the study progress.
- A final assessment will check the learning carried out by a student after the e-course with the virtual agent's assistance. A singular final quiz will be visible, in the exercise section of the E-learning platform, if and only if the student has answered to all the different questions of the corresponding start up quiz and if he/she has studied 'enough' the corresponding module. Technically, the concept of study 'enough' means that a student has to attend the learning objects within a module at least for an expected time defined by the didactic developers.
- Three case studies to improve the students knowledge showing a practical case will be presented by the "Virtual Coach" at the end of the course through the Machinima technique (use of real-time three-dimensional (3-D) graphics rendering engines to generate computer animation).





The project Virtual Assistant: “CLARA”

The graphic interface of the “Virtual Assistant” has been designed by the Danish partner (Health Care College of Aarhus). It is a female and her name is “Clara”, below her picture.



Of course I can. Tell me what you are having trouble with.

Can you help me?



COACH BOT activities: state of the art

Actually the project partners are working on the Work Package 4 which consists of the productions activity. The technological team are developing the project e-learning platform and its integration with the avatar “Clara”.

At the same time the Didactical team are developing all the course Learning Objects (audio lessons, lecture notes, quizzes).

Partners are also realizing dissemination and exploitation activities listed in the following section.



Dissemination and Promotion events

A second interim meetings among partners has been arranged in Bucharest (Romania), 14/15 May 2009. It aimed at training partners teachers on how develop the course Learning Objects (which LOs to be developed, how develop its, templates to use, images or not to include, tools to include in the web platform or not, etc).



Some of COACH BOT staff people took part in international events in order to promote the project.

Suzanne Carder, Norton Radstock College Project Manager, took part to ILearning Forum 2009, 19-20 January 2009, Paris (France).

<http://www.ilearningforum.eu>

Susanna Correnti, For.Com. Project Manager, took part to a National conference focused on the e-learning for the public administration and the health care sector: “L'integrazione dei sistemi di e-learning nella gestione della formazione/conoscenza nelle organizzazioni: tecnologia, condivisione e processi. Il modello della Emilia Romagna e del portale dell'e-learning per le aziende sanitarie Salus.Net”, 10 March 2009 Bologna (Italy).

http://itelsoc.it/index.php?option=com_content&task=view&id=104&Itemid=53

Federica Funghi, For.Com. Project Manager, took part to ICIE'09, the 4th International Conference on Interdisciplinarity in Education, 21-22 May 2009, Vilnius (Lithuania).

<http://www.estiatn.net/ICIE2009/>

Luca Angelo Galassi, For.Com. IT Project Manager, took part to EDEN 2009 Annual Conference, 10 / 13 June 2009 Gdansk (Poland).

<http://www.eden-online.org/eden.php?menuId=410>

Local and International events arranged:

Rome 30 September 2009. I° National Seminar.

This event aims to promote the COACH BOT project, to share the project aim and phases with stakeholder, but also it has been an opportunity to meet the home health care professionals in order to involve them in the setting-up process concerning the First general framework for the pilot training course.

Local and International events scheduled:

Luca Botturi, Seed Association Project Manager, will take part to the Annual Convention



of the Association for Educational Communications and Technologies - AECT, in Louisville, Kentucky, in 28-31 October 2009.

<http://www.aect.org/>

Susanna Correnti (For.Com.) and Maja Klančič (Secondary School Of Nursing Ljubljana) will take part to the International Conference on Communication in Healthcare, in Verona (Italy), in 7-10 September 2010.

<http://www.each-conference.com/>

The first National Seminar is also going to be arranged in all partners' countries:

Denmark, Aarhus: September 2009/January 2010

Slovenia, Ljubljana: November 2009

Switzerland, Lugano: January 2010

In United Kingdom (Radstock) and Romania (Bucharest) the first National Seminar is going to be arranged between October 2009 and January 2010.

