

AN INNOVATIVE APPROACH TO SUPPORT CONTINUOUS MEDICAL EDUCATION, THE PROBLEM BASED LEARNING (PBL) IN E-EDUMED PROJECT

Ilaria Reggiani, *FOR.COM Interuniversity Consortium, Italy*

Taina Avramescu, *University of Craiova, Romania*

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Distance learning is not a widely diffused learning methodology within the Medical Field, in particular for refreshment of competencies among Medical Professionals. e-EDUMED e-Learning educational center in medicine is a two year project funded by the European Commission started in January 2011 now at the conclusion which has developed and implemented a Virtual Learning Centre focused on Vocational Training for Medical Doctors and Nursing Professionals in Ultrasound Techniques and patient care providing basic and advanced knowledge. Being an experienced target group, Virtual Classes have been developed to integrate the Learning Pathway. Based on The Problem Based Learning (PBL) Methodology, the learners have been able to learn from videos of real case studies, share feedbacks and experiences among peers.

Continuous medical education is essential for job performance and efficiency of medical professionals since patients' satisfaction strictly depends on their qualification and training. Being updated and informed about recent technologies, practices, medications absolutely influences the success of medical mission and the impact on patient health. The quick and continuous development of Health and Medical fields, as well as the pressing of progress in terms of technologies, management and international balances, contribute to make more difficult the alignment of each competence profile to the requested changed standards.

e-EDUMED Field Work Research carried on in the first project semester witnessed that the Italian Medical Doctors spend a lot of time in training: traditional face to face refreshment courses, job shadowing and discussions with peers. They daily exploit all main sources of information and deepen any topic relevant for their profession. Beside that, experienced doctors don't have deep knowledge in e-tool and distance methodologies; they usually use

just email and internet. According to the Italian legal framework, they should spend about 25/75 credits per year for training, but they met serious difficulties in matching training with workday.

Aware of that, it is broadly recognised that Information Technology is a flexible and powerful instrument able to offer a solution and make the difference. Distance Learning Methodology could offer high level content, technology potential, professionals' interaction, share and teamwork in virtual classrooms. Unfortunately, Medical Doctors are definitely sceptical about distance learning applied for subjects like ultrasound or other topics which foreseen practical experience. For an experienced professional, ultrasound techniques and diagnostic through images strictly, for example, require a period of work-shadowing or coaching in order to learn techniques and try them suddenly on site. E-learning is, therefore, not suitable for topics that foresee practical experience since images and practical interaction has to be learnt in presence. By the way, most of them appreciate e-learning and mobile learning methodologies added values precious for theoretical topics such as guidelines, protocols, procedures and cross topics such as security and crisis management or privacy statements.

This picture could seem seriously negative for a successful e-learning medical pilot project. The challenge was in fact to offer an Educational Centre and an innovative learning methodology to support Continuous Medical Education able to change the consolidated perceptions, providing high quality of didactic content enriched by powerful pictures and videos of real case studies, practical information and an online space to share information, discuss with peers doubts and different experiences.

e- EDUMED Project has won the challenge!

"e-Learning Educational Centre in Medicine" is a two year European project started in January 2011 funded by the Lifelong Learning Programme (Leonardo da Vinci, Transfer of Innovation sub-programme) aiming to cope with the learning needs of medical professionals improving and updating their skills, knowledge and abilities towards a competitive European Medical Brand.

Core engine of the project is the partnership, an effective and multi-actor synergy consisting of 6 partners coming from different areas of Europe with an international specialists balance (medical, educational, technological). The consortium consists in Higher Education Institutions, a University Consortium, 2 SMEs

experienced in education, medical services multimedia software, a private hospital and a professional association with a long standing reputation for providing student-centred, innovative programmes related to health education and long lasting professional cooperation at international level. The challenge was to tailor online courses for different medical disciplines useful for the professionals who have to increase their practical abilities or refresh key concepts.

In detail, the challenge was to offer an attractive methodology (Problem Based Learning), a flexible and innovative virtual environment with Open Source technology (Open Source online Platform) and above all offer quality of content, real case studies, attractive videos as well as virtual spaces where discuss simultaneously problematic cases faced in medical experience. Medical partners of e-EDUMED project with support of academic staff and technicians tailored a breaking trough e-learning pathway to cope with medical learning needs. Doctors, Medicine Students and Nurses, who joined the Experimentation phase and benefited from the courses, settled key concepts, acquired knowledge on specific case studies and shared experiences with peers. In order to increase the impact of knowledge e-EDUMED learning pathway has been furthermore implemented in Bulgarian and Romanian languages.

As concerns the core theme of the didactic materials, two interactive modules have been developed: ultrasound and nurses' education. The third module has been addressed to the "Patients" in order to improve their health culture.

As concerns the "Course in Ultrasound" it is based on a modular architecture focused on three levels (power point presentation, level text, image level). Content is structured in the most appropriate way to build up gradual competences. For each module, partners developed packages containing sections with anatomical bases, clinical signs and pathological findings, ultrasound images, videos and a system for assessment of results.

A special section allows chatting, sharing content and assistance service by tutor. The learning pathway consists in 3 Modules:

- Theoretical Module Physical-Methodological Basis – Principles; Ultrasound modules; Technics and Ultrasound Semiology;
- General Abdominal Ultrasound;
- Special Ultrasound.

A total of 161 anatomy pages, 471 ultrasound pages, 606 PPT slides, 150 quizzes, 6 multimedia lessons, 12 virtual classes (recorded) have been developed by partners and published in the Platform to effectively impact on Medical learning needs.

As concerns the “Course for Nurse Education” is based on the promotion of health and the treatment of health conditions by supportive, preventive, therapeutic, palliative and rehabilitative means in order to attain or maintain optimal function.

Programme has been designed to give nurses additional education to prepare them for advanced nursing practice and to cope with the actual requirements in health care in the provision of primary health care for individuals, families and communities.

The syllabus has been designed for nurses in order to offer:

- Basic competences in nursing practice;
- New competencies related to Ultrasound Subjects focused on patient assistance before/after ultrasound examination and focused on Nurse active participation in healthcare ultrasound team; this module assures complementarity with the other 2 modules on specific target groups (doctors and patients);
- New knowledge and new skills for the role of nurse in patient education- smoking cessation, as expressed by the great interest from the Hungarian Chamber of Health Workers.

A total of 126 text pages, 355 slides and detailed multimedia lessons have implemented the curriculum of nursing professionals involved in the experimentation.

As concerns the last didactic pathway, the “Module addressed to Patients”, has as main aim to promote the improvement of the health culture of the partners countries population by provision of informative digital content, broadly accessible and easy understandable for broad audience of all patients, in close relation with the content provided by the ultrasound learning modules developed in the project. The Patient Module introduces the corresponding learning content of the ultrasound module (addressed to the doctors and medical staff) from the patient’s point of view which means that the structure of the topics and the content itself depends of the structure of the topics and the content covered by the previous ultrasound modules

Additionally the Parient Module includes a 4th section aiming to increase awareness of main ultrasound concepts and techniques and smoking damages. Non-smoking Module has been developed to implement health promotion and raising knowledge about prevention strategies for individuals, families, and communities. Last course represents a different way to increase awareness about health culture in European and International populations through an informative digital content easy accessible and understandable for broad audience. Main subjects are as follows:

- Effects of the tobacco on health;
- Epidemiology of the smoking;
- Methods of prevention and ceasing of the tobacco smoking.

Thanks to the effective and impressive didactic offer, e-EDUMED project support Medical Individuals and Institutes to grow exploiting and following the changes of contexts and environment where they operate. The professional experience has been the core of knowledge enrichment. Real case studies, discussions, videos and background guidelines have been the centre of the Problem Based Learning Methodology, a specific methodology applied in the project to maximise the impact of learning process. "Problem-Based Learning (PBL)", as a general model, was developed in medical education in the early 1970's when it was observed that many students, once placed on clinical working context, were not able to apply what they had learned in earlier years. Since then PBL approach has been adopted in an increasing number of other areas. The PBL is an instructional methodology in order to learn to solve problems. It is based on the assumption that "when we solve the many problems we face everyday, learning occurs". PBL is any learning environment in which the problem drives the learning. That is, before the users learn some knowledge they are given a problem. The problem is posed so that the users discover that they need to learn some new knowledge before they can solve the problem. The characteristics of this methodology are the following:

- 1) Problem focused: the content and skills to be learned are organised around problems, rather than as a hierarchical list of topics. The users begin to learn by addressing simulations of an authentic, ill-structured problem;
- 2) Learner-centred;
- 3) Self-directed, because the learners individually and

collaboratively assume responsibility for generating learning processes through self-assessment and peer assessment and access their own learning materials;

- 4) Self-reflective, because the learners monitor their understanding and learn to adjust strategies for learning;
- 5) Tutors are facilitators who help and support reasoning processes, facilitate group process and interpersonal dynamics and never interject content or provide direct answers to questions.

e-EDUMED pedagogical model meets the medical professionals learning needs through the synergy of a virtual Problem-based Learning approach, a peer training methodology, and a self-direct learning approach to promote the attainment of practical skills relating to ultrasound. Both the methodologies and the kind of contents delivered help medical doctors and medical students to widen ultrasound skills focusing on practice, case studies and team work. The PBL methodology has fostered a greater cooperation among medical doctors allowing them to share their professional experiences through the study and analysis of real cases and the peer training opportunity. PBL basic motivation is rooted in the fact that participants can develop the ability to use fact (their knowledge) to solve problems. Knowledge is considered as a mean, but not as a final achievement. Specifically, they do not learn about problems but they are challenged by them in order to agree on a solution. What is changing in a PBL approach is the “angle”, the assumptions of the teaching activity: neither a pure lecture based training activity nor a practical on the job training, nor a work based training but a learning strategy which exploits cognitive and metacognitive approach.

As concerns the technical features of the e-Learning Educational Centre, the “Online Platform” was designed on the basis of “Claroline”, an Open Source Platform. A specific area has hosted the PBL sessions, the “Virtual Classrooms”. These sessions have been hosted in Adobe Connect, a very powerful system of videoconferencing.

The web meeting area includes Discussion, Collaboration and Sharing areas.

A PBL repository has allowed hosting all the case studies and scenarios developed by medical professionals as project work,

precious material for new users and facilitators.

As a conclusion, e-EDUMED through its learning pathway didn't mean to substitute the practice but to strongly enhance the skills and knowledge of medical professionals and be better prepared to practice. Videos, pictures and virtual classrooms support medical professionals in training without having the presumption to be exhaustive, but essential and propaedeutic to practice. The collaborative and committed behaviours of medical professionals have represented the core engines of this two year of successful learning venture.

Three characteristics of Medical Professionals in terms of skills and abilities have successfully benefited from courses:

- To know: have updated theoretical knowledge;
- To do: have updated technical or manual skills;
- To be: have communication and relations' skills.

The project, through online courses, Virtual classrooms and Problem Based methodology, has supported medical professionals involved in the experimentation to keep refreshed those three aspects of medical professional profiles meaning to be trained and properly informed.

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