

## **Lifelong Learning Courses – Not Just an Alternative Way**

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### **Introduction**

At present, Europe is only slowly recovering from the economical recession that has been influencing not only the industry, but also education – there are held fewer LLL courses as companies are saving money that should have been invested into further training of their employees. In university education, which is seemingly not related to these problems, there are also less full-time students, but the main reason here is the major decrease of natality in the beginning of the 90's.

With respect to the strong competition in the higher education “market”, all educational institutions are attempting to make their offer of “products” unique, competitive and demanded by their “customers”.

Thanks to two European projects, the Faculty of Electrical Engineering at the Czech Technical University in Prague was able to open a new chapter of e-learning education focused mainly on LLL.

The first of the said projects is called ELefANTC (E-Learning for Acquiring New Types of Skills – Continued); it is currently in its final phase. The second one is IntEleCT (Internationalisation of Electronic Communications Training). Both projects combine traditional e-learning approach with tutoring and they seek to offer attractive topics.

### **Common Features**

The first common feature of both projects is the concept for development of e-learning materials.

The authors of pedagogical support tools are often not very skilled in development of e-learning instruments; they usually know only writing of textbooks and other printed materials. When they are forced by the circumstances to create electronic ones, they tend to follow the patterns they are used to, and they efforts mostly result in “electronic books” that do not have anything to do with real e-learning.

Therefore it is the first logical step before the actual authoring process to perform intensive training of the prospective authors of content that makes them familiar with fundamental principles and procedures in e-learning,

especially the differences between e-learning and face-to-face education. They must learn that it is necessary to use various contact elements in their materials, such as separation pages (screens), frequent interactive mini-tests, summaries, repetitive pages, but also animations, simulations, models, etc. Another important instruction is that the teacher cannot be with the student all the time, but only as a tutor in some given periods (but intensively). This means that the interactivity has to be supplied also by different types of tasks, scheduled assignments and similar types of elements. Interactive and pseudo-interactive communication with a tutor employing chat (or videoconferencing) as well as e-mail is an integral part of the training process.

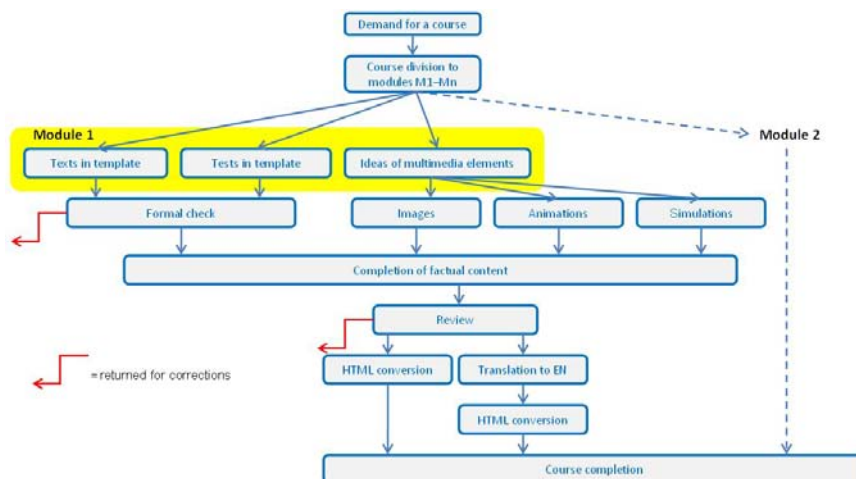
In the previous paragraph we have indirectly shown the process of educational content authoring and presentation as demanding and complex activity that includes many areas of knowledge. For this reason it is apparent that the said process cannot be performed by an individual person (that would have to be a “renaissance” one, and still would most probably get in trouble with time and capacity); also, each person participating in the authoring and implementation process must be given clear instructions (preferably in the form of methodological and formal manual) what has to be done and how.

In our case, i.e. authoring of e-learning training material in multilingual international environment, the process is even more complicated, as the individual elements (links of the authoring chain) are geographically spread around Europe; the same applies to implementation of the e-learning courses that run simultaneously throughout our continent.

Let us illustrate the basic authoring principles. The educational material is divided into smaller parts that we call modules. The extent of each module may correspond, for example, to one lecture. Author of text is then assigned for the respective module – a key person that prepares the factual (textual) content using a defined template (see below), cooperates on development of pedagogical “script”, prepares sketches of pictures, ideas of animations, simulations, models and other innovative elements, and also suggestions of separation ages, tests, etc.

Close to the author there are designers of pictures, animations, simulations, models, videos and other types of multimedia content. All these persons prepare the skeleton of high-quality e-learning material. Each of the team members follows exactly defined standards (text template and graphical manual). The text template regulates the structure of modules, their extent and purpose of their individual parts. It also defines sufficient variety of unique styles. There are three important aspects. Firstly, the authors (who are not experienced in routine programming, HTML code, etc.) should get a simple and comprehensible tool that will help them to prepare the primary texts in an

efficient way; this is the MS Word template that provides enough guidance. Secondly, various modules coming from different authors must have the same nature, and from the students' perspective they must be perceived as a homogeneous entity. Also, the resulting e-learning material should be of superior quality, and possibly can be developed in accord with the development of the respective scientific area. And finally, also the run (operation) of the courses must be of high quality and bring the maximum benefits to the trainees. How can we achieve these objectives?



**Fig. 1.** Procedure for development of e-learning modules

Let us describe the concept of the development process that reflects the requirements listed above.

The very basic procedure is authoring (marked yellow in Fig. 2); for the sake of clarity, the individual elements are divided into three groups: texts, tests (both of them prepared by the author of content) and multimedia elements (in wider sense not only pictures, animations and simulations, but also models, videos, etc.).

These elements are integrated into one compact piece that subsequently undergoes a thorough revision. This is a key moment that should guarantee the quality of the entire output. The experience shows that in order to achieve satisfactory quality, there must be several repetitions – i.e., the reviewers get the piece usually three times. It is worth noting that the process of (repeated) reviewing is quite demanding in the terms of time and that it can considerably delay the project; therefore the development process includes also formal check that is applied only to the textual part.

After the reviewing and approval the piece is converted to HTML (or, more precisely, to a SCORM-compatible package) and stored in LMS (Learning Management System). International projects must include one more step before this, which is localization (translation) to the respective local languages (Fig. 1 uses English as an example). The individual modules are used to compose courses, which are offered to trainees.

Perhaps it looks like storing into LMS is the final step and that the training itself does not require any special activities. However, some most important procedures just being here, which determine the success of the project.

The first task is to attract the trainees (students). It is more than advisable to make an analysis before the beginning of project implementation phase and identify the topics that are in demand on the educational “market”. However, this is not enough. Marketing campaign must follow that helps to win the attention of target groups. The relative disadvantage of a higher education institution is that it is not a commercial company, and not capable of really efficient marketing. Its advantage, on the other hand, may be a special LLL department that takes care of development as well as “selling” of the courses. All available channels should be used to find the trainees.

When we have the first trainees, the training may begin, and it's the turn of the training institution that has to ensure smooth and satisfying passage of the trainees through the course, applying an unambiguously defined system. For this purpose there should exist a number of methodological instructions that must be obeyed by the individual tutors (and trainees, of course); chief tutor who is responsible for the entire course plays a key role in this process. The following details must be clearly given:

- Successive registration to the individual modules;
- Scheduled tasks and tests;
- Scheduled time windows for on-line communication (chat; videoconferencing);
- Schedule of other consultations;
- Schedule of face-to-face tutorials;
- Standards for successful completion of the individual modules;
- Standards for successful completion of the entire course;
- Rules for the final testing;

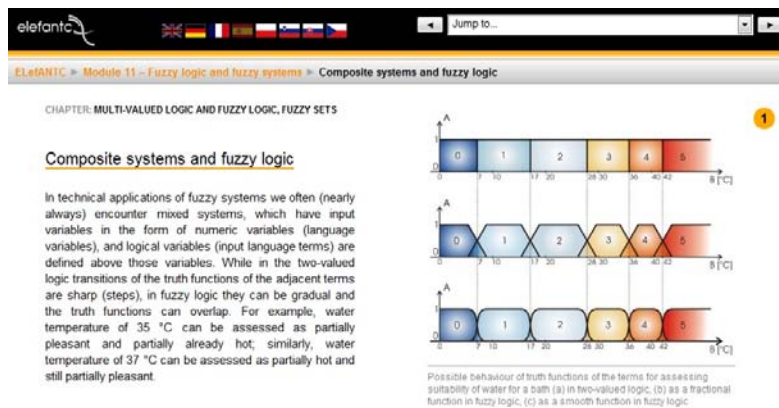
- Rules for issuing of certificates;
- Feedback from trainees;
- Procedures for corrections and updating of modules;
- Price for the course and payment methods;
- Solutions for non-standard situations.

## ELefANTC Project

The principal output of the project will be LLL online course covering the area of industrial automation and telematics, offering a variety of available languages

(English, German, French, Spanish, Polish, Slovenian, Slovak, and Czech). A multilingual tool for continuing education in the said area has not been prepared in such extent and quality so far.

Another output will be a specialized multimedia (“speaking”) dictionary containing thousands of key terminological entries including their pronunciation in the above listed languages. Such dictionary (that surely can be helpful especially for employees who work in an international environment) is also incomparable to any existing tool.



**Fig. 2.** Example of a page from “Fuzzy Logic” module developed within ELeFANTC project

Both products are being developed as online applications within a learning management system that offers also tutoring and supervision capabilities; however, an alternative version will be prepared for those trainees who cannot access the LMS over an Internet connection, with the tutoring option based on other forms of communication.

Secondary outputs include support instruments for project management and for the developed course (e.g. “Methodical and Organizational Handbook” and the management part of ELeFANTC web server).

The project consortium is based in five countries (Czech Republic, Slovakia, Slovenia, France and Spain) and it consists of six partner institutions. The pedagogic and didactic skills of higher educational institutions are complemented with lifelong learning competences of a LLL association and professional know-how of an industrial company. The industrial partner in cooperation with universities are the key players in preparing of the factual content; the LLL association (with links to the technical universities and industrial companies) performs activities related to continuous education and it facilitates contacts with the target groups; the industrial company offers a large portion of information that forms most of the factual content of the course, and it can also precisely evaluate real needs of the target group. The coordinator has also a team of skilled programmers who are able to perform integration of the developed materials into the online environment.

In the pilot phase, about 400 persons should be involved in the training, making use of the developed products. They will provide the project consortium with

valuable feedback that will be used to make the necessary changes to the final version of the materials. By the end of the project, thanks to the established relations among partner institutions, the pilot phase should seamlessly transit into routine performing of educational activities focused onto the selected target groups; the estimated number of trainees in the post-project phase is at least 800 each year.

At present time all course modules have been developed and revised and they are available through the LMS system accessible from the project portal. The multilingual multimedia dictionary is also ready. Training centres for the individual language areas have been established and the pilot run is in progress with about 200 trainees so far. Fig. 2 shows an example how pages (screens) of the course modules are designed.

## IntEleCT Project

The major objective of the IntEleCT project is to update the complex study material that consists of six different courses covering the area of electronic communications, supplemented by a set of appropriate certificates, and to transfer these learning tools to national conditions and environments. The said instruments will help especially the employees and specialists in the given area who need re-qualification or knowledge update to keep and/or improve their position in the job market by the means of lifelong learning; this is particularly important from the viewpoint of financial recession and alleviation of its consequences.

The principal output of the project will be a set of the six LLL courses transferred from the previous Train2Cert project, offering a variety of available languages (English, Czech, Polish, Slovak, French, Italian, Slovenian, and Spanish), according to the selection of the respective national partners. Likewise the ELeFANTC project outputs, a multilingual tool for continuing education in the said area has not been prepared in such extent and quality so far.

Another output will be a corresponding set of certificates transferred from the previous InCert project, suitable for identification of the employers' needs and evaluation of the trainees after taking the said courses, also available in the listed languages.

Both products will be primarily developed as online applications within a LMS that will offer also tutoring and supervision capabilities; however, laboratory and computer training part will be included in the schedule of the courses, which will be also necessary for the certification process.

Secondary outputs will include support instruments for project management and for the transferred courses; some of the necessary tools will be transferred from the previous project ELeFANTC.

The project consortium is based in 7 countries (Czech Republic, Poland, Slovakia, France, Italy, Slovenia, and Spain) and it consists of 8 partner institutions. The industrial partner will be the key player in expert testing of the updated courses even before their release for use by the pilot trainees (about 300 trainees will be involved in the pilot testing phase).

At present time English versions of all six courses have been developed and they are successively being reviewed by the industrial partner. The LMS environment is being prepared and prospective trainees (target groups) identified and contacted. The individual courses are being merchandised.

## Conclusions

The two introduced project and their results show that a university can be an institution successfully offering various LLL products to clients from the industry. Of course we want to go further – we have been involved in another international project focused on a specific modern branch of distance education, which is m-learning (mobile learning), bringing the educational content to mobile devices. Students are not limited by desktop computers as they can use some type of mobile terminal – PDA, mobile phone, netbook, etc. The form and content of the courseware have to be suitably adapted. The new project MLARG (Mobile Learning for the Young People at Risk Groups) that should offer language learning opportunities mainly to teenagers has started at the end of 2009.

## Acknowledgment

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**T. Zeman, J. Hrad. Lifelong Learning Courses – Not Just an Alternative Way // Electronics and Electrical Engineering. – Kaunas: Technologija, 2010. – No. 6(102). – P. 23–26.**

The situation of engineering education at technical universities in Central European countries has been recently complicated by several factors, including financial recession, decreased interest in technical science, and lower total number of young people who could become students. These circumstances imply financial problems of the universities (especially public ones), but also forces the teachers to turn to different activities, methods and target groups, for example distance and lifelong education that can become very important in the near future. The purpose of this paper is to introduce specific projects focusing on distance education in the areas of automation and electronic communications, their partial results and possible exploitation of their outputs by partners in various European countries. Ill. 2, bibl. 2 (in English; abstracts in English, Russian and Lithuanian).

**T. Земан, Уа. Храд. Особенности способов постоянного обучения // Электроника и электротехника. – Каунас: Технология, 2010. – № 6(102). – С. 23–26.**

Указано, что за последние годы в университетах Средней Европы значительно уменьшился интерес к изучению технологических наук. Такая тенденция связана как с улучшением финансовых ресурсов, так и с уменьшением числа абитуриентов. Представлены специальные проекты по изучению специальностей автоматизации и электроники на основе дистанционного обучения. Ил. 2, библи. 2 (на английском языке; рефераты на английском, русском и литовском яз.).

**T. Zeman, J. Hrad. Visą gyvenimą trunkančio mokymosi kursai – ne tik alternatyvus būdas // Elektronika ir elektrotechnika. – Kaunas: Technologija, 2010. – Nr. 6(102). – P. 23–26.**

Pastaruoju metu Centrinės Europos technologijos mokslo srities universitetuose inžinerinio mokymo situacija buvo komplikauta dėl keleto veiksnių, įskaitant finansinę recesiją, sumažėjusį susidomėjimą technologiniais mokslais ir mažėjančių abiturientų skaičių. Dėl to universitetai (ypač valstybiniai) susiduria su finansinėmis problemomis, kurias siekiama išspręsti taikant studijų procese kitokius metodus ir tikslines grupes, pavyzdžiui, nuotolinį arba visą gyvenimą trunkantį mokymą, kuris netolimoje ateityje gali turėti labai didelę reikšmę. Pristatyti specialūs automatikos ir elektroninės komunikacijos nuotolinio mokymo projektai. Pateikti jų daliniai rezultatai. Il. 2, bibl. 2 (anglų kalba; santraukos anglų, rusų ir lietuvių k.).

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