

Experiences of Receiver Partners of Elect2EAT

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Abstract: *The role of the Receiving Partners (training centers, industrial associations and schools) is to identify and analyze targeted user requirements, select the innovative content to meet these requirements and make the training system feasible.*

1. INTRODUCTION

The major aim of this project is to develop and disseminate widely accessible e-learning material in the field of electro-technology in English and the mother tongue of the participating Middle-European countries, Hungary, Romania and Slovakia. The potential users of this material are the people connected to the field of electronics: the teachers of secondary technical schools and human resource managers or referents of electronic firms (potential trainers, the primary target group), and the personnel working or wanting to work in the electronics assembling industry (potential students to be trained, the secondary target group).

The Budapest University of Technology and Economics, the Politechnica University of Bucharest and the Technical University of Kosice developed a highly visual, useful training material with elements that are hardly accessible in everyday public education or adult training, and transferred it to secondary schools and adult training centers in the participating countries (the receiving partners) to try it out and disseminate the results of the project.

The receiving partners in Hungary were the Debrecen Regional Training Center (hereinafter DRKK) and the North Hungarian training Center (hereinafter ÉRÁK). The manuscript gives account of their experiences and the performance of tasks in the project involving a wide range of high professionals.

2. OVERVIEW

The programme accreditation aims at the quality assurance of both the training and the planning of it. The training programme is primarily designed for experts with technological background who wish to improve their knowledge in computer aided design and production. The course itself provides an opportunity to acquire information from what they can benefit both in their professional activities and on the labour market [1]. The target audience may comprise staff of vocational schools and institutions with electro-technological activities or instructors of any other organization or institution where life-long learning facilities are provided. Ex-course participants may be invited to provide further training to secondary target groups in their mother institutions, and university professors may wish to integrate the material into their courses. The demo days enable the participants to get a thorough insight into the design and the layout of the course and give wide publicity to the Elect2eat project outcomes and activities alike.

3. ACCREDITATION

Possessing the accreditation is not a proviso for running the adult training activity or the implementation of the programme – yet with the expert approval of the content, the institution may ensure the uniform high professional level during the

approved period of the accreditation. Furthermore: the Elect2eat project outcome sustainability will be guaranteed in this way [1].

The National Institute of Vocational Education (NIVE) is responsible for the assessment of accreditation cases in the scope of the Adult Education Accrediting Body; keeps records of accredited institutions and programmes, issues certificates and provides control. It makes comparisons between domestic and international qualification requirements. Develops the set of conditions under which vocational qualifications adapted to European requirements can be equivalent, as well as validation of national and international qualifications. It coordinates the adult education professional development work of regional workforce development and training centres. NIVE issued an accreditation licence to the Train the Trainers programme (“E-Learning Education and Continuing Training to Electronics Assembling Technology”) [2]. The accreditation is valid for ÉRÁK between 22 April 2009 – 22 April 2013. Other institutions may take the licence over from ÉRÁK in the course of a separate procedure at NIVE, initiated by the beneficiary organisation [1].

4. DEMO DAYS, DISSEMINATION OF OUTCOMES

Demo days had to be organised with twofold objectives: first – to provide publicity to the overall Elect2eat project, second – to attract as many specialists, experts from the field of electro-technology (both from education and industry) as possible. Consequently, the audience received general information about the aims and objectives of the consortium and was given an insight into the course content that had been produced.

4.1 ÉRÁK

ÉRÁK organised a demo day on 17 October, 2008 at their own premises. It was attended by 40 people (vocational school teachers from the region, professors from Miskolc University, JABIL engineers). The day popularised the module contents, the method and the new developments and disseminated project information. It was a full day’s programme, presentations were held by prof. Dr Zsolt-Vitéz-Illyefalvi, allowing a question-and-answer session in the afternoon. Experts from both

the education sector and the industry expressed their interest in the valorisation of the contents and in participating in the Train the Trainers course. It may serve as supplementary material to existing courses or subjects at university or technical school level, and as the project outcome: the course material can be tailored to the needs of the institution.

4.2 DRKK

The Debrecen Regional Training Centre organised two dissemination days: the first on 5 November 2008 and the second on 30 April 2009. They invited 4 secondary technical schools teaching electronics from Debrecen, and also many firms dealing with electro-technology in Hajdú-Bihar county. They also proclaimed the events on their website. The lectures were given by Zsolt Illyefalvi-Vitéz (Fig. 2) from the Budapest University of Technology and Economics, the leader of our consortium, who presented the e-learning material and the aims of the project, and Dr. László Ábrahám, the managing director of National Instruments in Debrecen, who spoke about his expectations connected to this programme.

The majority of the 50 participants attending the lectures were students and teachers of the invited secondary technical schools, but some students of the electrician course held for unemployed people also took part in the events. Both demonstration days proved very successful. The audience became quite interested in the possibilities provided by the programme, and they were ready to enter the planned pilot courses offered for the primary and secondary target groups. The day ended with an interactive session rising further ideas of use.



Fig. 1. Demo day at ÉRÁK

5. TRAIN THE TRAINER COURSES

The rapid development of microelectronic devices and their assembling technology required a similarly sudden adaptation of expert knowledge (engineers, technicians, skilled workers). The main ambition of the Train the Trainers course is to enable the experts to take over and integrate the description and introduction of new electro-technological contents. These will be provided by the above mentioned leading universities of the mid-European region in the form of web-based educational packages integrating spectacular, exemplary multimedia elements. The course may ensure a flexible opportunity for retraining experts introducing new areas to them based on the needs of the employers and the industry. By visiting the virtual assembling plant the users may be able to study the process of electronic assembling and may understand the operation of the given equipment and the stages of the process.

5.1 DRKK

The major aim of the pilot trainings was to try out the e-learning material for both the primary and secondary target groups and give a feedback on it for the developers. DRKK intended to organise pilot courses: two for the potential trainers of the e-learning material (the primary target group) and the other four for the potential users of the knowledge (the secondary target groups) with 10-15 participants each. They also aimed at compiling a questionnaire and assessing the participants' opinion about the material.



Fig. 2. Zsolt Illyefalvi-Vitéz, PhD giving his lecture

The location of the two primary courses for the primary target groups were – one in Debrecen and one in Szolnok – in June 2009. The accredited

training programme had been taken over from ÉRÁK to ensure homogeneity [3]. Altogether 11 secondary technical school teachers took part in the training. The participants were quite satisfied with the e-learning material and stated that it can give a very useful practical background in public education. The 3 secondary technical school teachers of the Debrecen group also became partners in organising pilot courses for the secondary target group, where they were the trainers already. The course contents were as follows:

- Introduction to the teaching of the electronics assembling e-learning course” (the actual „Train the Trainers” course), containing 24 contact lessons (8 lessons on 3 days) and 32 hours independent work;
- „Electronics assembling e-learning course” (the training for the secondary target group), including 24 contact lessons (6 lessons on 4 days) and 48 hours independent work.

5.2 ÉRÁK

The Train the Trainers pilot course („E-Learning Education and Continuing Training to Electronics Assembling Technology”) was attended by experts from education and industry: 3 participants from the University of Miskolc, 3 from vocational institutions, 5 from the production departments of JABIL, 2 from ÉRÁK. JABIL Circuit Hungary Ltd. housed the pilot course and organised a thematic factory visit. Contact lessons were held by professors of BME in cooperation with the participants using the available electronic course content in the form of presentations. See the module structure (Fig. 3) and the course schedule (Tab.1).

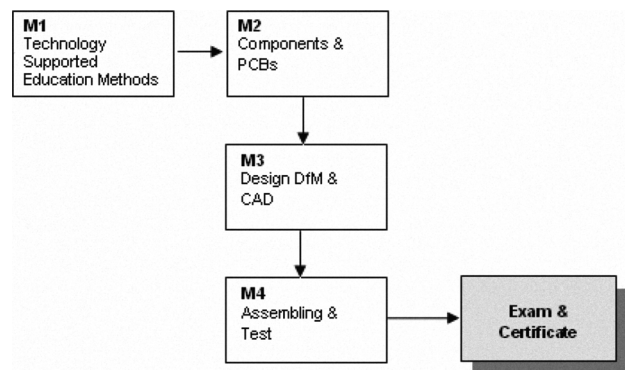


Fig. 3. Train the Trainers Course

Modules	Classroom	e-learning
1. Tech. Supported Education Methods	2 hrs	6 hrs
2. Components & PCBs	6 hrs	10 hrs
3. Design DfM & CAD	8 hrs	8 hrs
4. Assembling & Test	8 hrs	8 hrs
Exam & Certification	2 hrs	

Tab. 1. Course schedule /24 hrs classroom + 32 hrs e-learning = 56 hrs/

6. CONCLUSIONS OF THE PRIMARY COURSES

The methodology of the course is based on flexible modular principles (asynchron e-learning form) coordinated by tutors taking into consideration the autonomous personality of the adult individual and relying on his prior knowledge and experiences. Theoretical content is passed on with distant learning methods ensuring individualised progress, practice is carried out in the form of group consultations. It was then possible to present or supplement the material orally, to continue discussions and give individual presentations. The participants demonstrated their optional topics to the group and the tutor. This part had dual functions: the participants, as the would-be tutors of further courses were using the online material and it was part of the oral exam.

Practice tests were available in the form of self-assessment exercises. The virtual visits to the assembling labs together with the animated videos and voice recordings proved to be very useful and user-friendly.

JABIL, the host of the course, organised a gratis on-site tour to the course participants thus reinforcing course contents. They could observe the technologies and equipment functioning in various production lines. This opportunity made the material even more spectacular and visual. Participants liked the course material extensively and the interactive learning-tutoring method alike. The introduction and valorisation of it in their own field is prognosed to be feasible. Although the surface differs from the usual „Windows“-based structures, it is logical and easy to follow especially after studying the „User’s Manual”.



Fig. 4. Face-to-face event at JABIL

They found the material appropriate to the practice and relevant to their interest. It can be integrated in BsC education at the university, and in vocational training or in industry.

Testing opportunities can be improved by extending the amount of tests. Some course parts shall be inevitably updated as it is required by the fast speed of the technological development.



Fig. 5. Assessment with computer.

Feedback was given by filling out questionnaires. It included questions concerning the training, its precedents, contents, the methods the quality of the material, that of the slides, usability etc. The overall feedback of course participants was positive. These feedbacks and interviews with people concerned will be compiled in a report. ÉRÁK is to run two courses with the leadership of the Tran the Trainers course participants for secondary target groups in September 2009.



Fig. 9. Course for the secondary target group at DRKK

After summarizing the results we could state that the students were satisfied with the conditions and methods of training and also with the material itself. Depending on their age and previous knowledge they found the course difficult at a different rate, though almost all of them agreed independent of the above-mentioned factors that some parts of second (“CAD & DfM”) module were too hard for them.



Fig. 10. Trainees with their certificates at DRKK’s exam day

At the time of the processing of present paper ÉRÁK is negotiating the running of two courses for their secondary groups at two local technical schools with electronic profile. The possibility of launching a third course on the premise of the training centre is to be considered.

Altogether, we can declare that both DRKK and ÉRÁK have fulfilled their tasks and reached its aims during the project to date.

8. CONCLUSION

Both institutions actively participate in the valorization process and are to produce impact analysis with measurable figures.

REFERENCES

- [1] Legals of HU VET:
https://www.nive.hu/english_version/index.php
- [2] Accreditation licence of ÉRÁK: “E-Learning Education and Continuing Training to Electronics Assembling Technology”,
Registration Number: PL-3226.
Effective from 22.04.2009 to 22.04.2013.
- [3] Accreditation licence of DRKK, adapted
“E-Learning Education and Continuing Training to Electronics Assembling Technology”,
Registration Number: PL-3226/1.
Effective from 29.07.2009 to 22.04.2013.