E-Learning Competences for Trainers in the Workplace

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Abstract—E-learning in the workplace requires specific competences for trainers. Too much attention was given to the technological aspects. Trainers learned to work with hard- and software. A typical example is the European Computer Driving License (ECDL). A lot of people attend courses on text processing, spreadsheets, databases, internet & e-mail,… Still today these kind of trainings are successful but using a Virtual Learning Environment (VLE) like e.g. Blackboard, Moodle, Dokeos,… demands more didactical than technical skills. Especially e-learning and blended learning is too demanding to let trainers learn to use these tools only by trial and error. More and more is generally accepted that the e-learning competences for trainers are too tighten. Zwaneveld and Bastiaens (2007) see five competences trainers should have when they want to integrate ICT in their training practice. Besides the theoretical background, two examples will be demonstrated that try to enhance the ICT-competences for teachers and trainers. The first example is a very specific example, directed to trainers in the automobile-sector. The second example is a general and more broad example that is developed in our own university: the postgraduate E-learning and Digital Didactics. In this 2 year course, which counts 4 modules, trainers are learned how to learn online in the workplace. This year we saw that trainers don’t have any insights in elementary knowledge, like e.g. connectivism as learning theory, the role of the e-moderator,…

Index Terms—Connectivism, E-learning competences, Epistemic Games, European Computer Driving License (ECDL), Multimedia, Postgraduate E-learning.

I. THEORETICAL BACKGROUND

A. Introduction

When ICT was introduced as possible supporting tool for learning in the workplace, trainers often got trainings on how to use technology. Still today these kinds of trainings are successful. The ECDL-foundation even graduates people that prove to have basic knowledge about seven modules, from basic insights in information technology and word-processing to the internet and e-mail. Main goal is to develop ICT-basic skills to increase the efficiency in using software. Also the introduction of the Virtual Learning Environments (VLE) followed the same direction. Courses were organized to learn teachers and trainers how to upload documents, how to make quizzes. … It is often seen that these kind of courses on the use of the VLE is directed into online learning. Baars (2006) describes the organizational aspects and advantages of this kind of education: education independent from time and distance. Also the advantages to increase communication among learners and to help learners with disabilities are described. Baars sees 7 bases for training with digital learning means:

1. A better cooperation between learners,
2. Active learning,
3. Direct feedback,
4. Better and more contact with trainers and peer-learners,
5. Possibilities to learn in different ways,
6. Contextual learning,
7. A larger spread in different ways of teaching and learning.

However learning in the workplace is mostly a combination of online and offline learning. And even in online learning there is a rapidly growing change in the e-learning competences that teachers and trainers need for the future. Bottelberghs (2009) sees three shifts in, what he calls the second wave (after 11/9) of the digital revolution:

1. The shift from the introduction of new technologies to the use of the new technologies to express ourselves. This is multimedia-literacy.
2. The shift of a generation that is educated literary to a generation that is educated with multimedia.
3. The shift of the focus on the tool to the focus on the objectives (of using these tools), that is communication and dialogue.

B. ICT-competences for trainers

Until now too little time is spent on didactical courses to learn trainers to use ICT with a learning surplus value. To offer these kind of courses it is necessary to determine what kind of ICT-competences trainers really need. In the European U-teachers project the competences of trainers with regard to interaction with themselves, students, colleagues and the neighborhood are combined with eight specific ICT-themes.

Summarized, the ICT-competences for trainers have three dimensions:

1. The trainer knows for what learning activities ICT can be set in (awareness).
2. The trainer has the necessary skills for using hard- and software (readiness).
3. The teacher knows the pedagogical-didactical elements of ICT (e.g. drill and practice programs).

Zwaneveld and Bastiaens (2007) argue that the most categories of ICT-competences for teachers and trainers are too tighten. They see five competences trainers...
should have when they want to integrate ICT in their training practice:

1. **Individual media-competences**
   This includes the basic knowledge and skills for handling the required hard- and software. These media-competences also include the use of ICT, like a beamer,… in a traditional training practice.

2. **Critical media-competences**
   This includes the skills to select critically the media in the learning process of learners. The criteria are educational, human and social.

3. **A lifelong learning competence**
   This means that trainers have to be aware of all the new technologies that are developed and can be integrated in the daily training and learning practice. We think e.g. at the Smartphone.

4. **“Supervising learning process”-competences**
   Teachers can optimize the learning processes of learners. Communication is a core element in learning. Learners in groups are more and more located at different places and locations. ICT makes it possible to maintain communication between these learners. It is a competence for teachers to know this and have the necessary skills to organize this kind of communication and to manage and enhance the learning process.

5. **Educational-design competences.**
   This competence includes to develop in a right way the necessary learning materials and didactical activities using ICT and new media.

Zwaneveld & Bastiaens argue that ICT-courses should part from these competences to learn teachers to use ICT and new media in their teaching practice.

Last but not least there is an increasing interest in using games and simulations for training. It seems not necessary that trainers should be able and competent to make simulations. They should however be able to integrate simulations in their teaching practice. A lot of already existing simulations are very useful for e-learning in the workplace. Especially the epistemic games (Teunis, 2009), games in which the players take the role of professionals to learn from realistic problems in the daily situation of professionals and to come to creative solutions, can help learners in the workplace to learn more efficiently. Before using these games in the teaching practice, teachers and trainers should first play those games themselves, to experience what can be learned by gaming.

II. **PRACTICAL EXAMPLES / BEST PRACTICES**

In this section we describe two best practices of courses that try to enhance the ICT-competences of teachers and trainers. The first example is a very specific example about e-learning in the automobile-sector. The second example is a general and more broad example that is developed in our own university and describes a method to train trainers in the use of e-learning.

**A. Autoweb**

Employees in technical firms, lice e.g. garages, need more and more courses. Due to the very fast innovation in technology, lifelong learning is a real need for these labor forces. On the other hand are the needed courses very specialized and expensive. Another problem employers in this economical sector in Western Europe face is the lack of candidates. Also secondary education schools see that the wide interest for these studies is decreasing. One of the factors that causes this problem is that schools don’t have enough money for investing in new and high-tech machines and that teachers have too less developed e-learning competences.

Therefore an Interreg project was submitted and approved for financing. Interreg is an initiative of the European Union meant for the permanent development of the “European Space”. The third phase of Interreg is meant for enhancing the economic and social cohesion within the European Union. Partners in this project are secondary education schools, universities and training centers for in-service employees. This project experiments with partners in several languages: Dutch, German and French. The project starts from employees in garages and wants to offer them a continuing course on four modules, like air conditioning, diagnostic, multiplexing and common rail. The modules are developed in the three languages of the participating partners. One of the main goals is to try to build a blended learning track that can be used as well by students from secondary education as well as by in-service mechanics. If this could succeed, it would have two main advantages:

1. Students can already and immediately learn together with ‘real’-colleagues in the daily practice of their future job.

2. The development of learning materials, like e.g. the VLE, but also the simulations could be made by one organization and used by much more organizations, like schools and training centers.

The theoretical elements are offered through e-learning, using the Virtual Learning Environment ILIAS. The advantage of a VLE is that an employee can choose when and how long he wants to learn. He could do this in his spare time when he has a 30 minute break. And students can use this particular module within a fifty minute lesson in secondary education. Learning via this way is independent of time and location and that’s what those people from the garages want. At this moment we see that trainers really need e-learning instructions to get started with the project. Especially the integrated use of the VLE within the regular lessons is difficult for teachers and trainers. Often they just repeat in the lesson what the learners already saw, using the simulations. Also the use of the communication tools is a problem. Teachers often don’t react or not in (expected) time by the learners. The developed materials are now used in five secondary education schools and a training center in Liège (Belgium). Students and learners in the workplace are motivated to use the learning materials. There is an interest of other institutions the start also with the developed materials. The goal to let the materials be used by more and more learners is achieved.

**B. Postgraduate E-learning & Digital Didactics**

To realize earlier mentioned ICT-competences for teachers a longer course is needed. Therefore a postgraduate e-learning was set up. The postgraduate e-
learning is a course, consisting of four modules, spread over two academic years. The four modules are:

1. Pedagogical-didactical module
2. Technical module
3. Communication, change module
4. Project module

The first module emphasizes all the pedagogical elements that are related in using e-learning strategies or tools, like VLE’s. One of the main topics is the study of the connectivism: a learning theory for the digital age. Behaviorism, cognitivism, and constructivism are the three broad learning theories most often utilized in the creation of instructional environments. These theories, however, were developed in a time when learning was not impacted through technology. Over the last twenty years, technology has reorganized how we live, how we communicate, and how we learn (Siemens, 2004). Also the study of the cognitive multimedia-theory (Mayer, 2001) is an important part of this course-module. Teachers and trainers use the VLE too much to upload documents, which are even better printed. What suits best learning on paper and digital is the question students should try to respond? In the second module students are learning all the different kinds of software that can help to realize e-learning. VLE’s in open and commercial software are studied, but also WEB 2.0 tools. Not the tool itself is important, but students always start from the learning needs and try to find those tools that best suits those learning needs. The third module focus on two core elements: communication and resistance against innovation. For training students in e-communication, the five stage model for e-moderators of Dr. Gilly Salmon is used. Salmon describes five stages to realize an efficient and effective e-communication in e-learning. An interactive (flash)-version of this model can be seen at http://www.atimod.com/e-moderating/fivestepflash.htm. Each stage requires participants to master certain technical skills (shown in the bottom left of each step). Each stage calls for different e-moderating skills (shown on the right top of each step). Learning students to use this model should help them to have an efficient e-communication with their learners. Where innovation takes place in organizations, there will always be resistance. How to deal with that resistance is studied intensively, using the book “the theory and practice of change management” of John Hayes. Students try to apply the theory in their own organization and solve at least on practical problem. In the last module, the project module, students select a real existing problem in their school, learning center or organization and try to solve the problem by using one or more elements from the previous modules.

In this first year, we see that participants come from very different organizations. Secondary education schools, universities, training centers, ... All the participants attended some years ago a teacher training, but are not aware of the didactical and pedagogical aspects of e-learning.

There are more examples of trainings, like e.g. Sheffield Hallam University (UK) offers a Master of Science in E-learning, Multimedia & Consultancy. (http://www.shu.ac.uk/education/elmac). UOC (Spain) offers a European Certificate in E-learning Course Design and Teaching.

C. Conclusions
As conclusion can be formulated that realizing e-learning competences with trainers is a multidisciplinary task that takes time. Technology is part of the course, but ICT-competences for trainers requires much more. It is important to think at the very fast innovations in ICT. E-Learning competences for trainers are much more than basic ICT-skills, like word processing or uploading documents in the VLE. Multimedia-literacy and using epistemic games and simulations are the challenges for effective and efficient e-learning in the workplace. Organizations should be aware of that and invest enough, not only in hard- and software, but also in training and schooling for trainers in the workplace.

REFERENCES

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