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E-learning as distance transfer of skills and knowledge

Abstract. Effectiveness is a key component of education. There are various forms and methods of teaching. One of the modern ways is e-learning, which, however, if adopted properly needs taking the series of different actions beforehand. The workers in many fields (scopes) are constantly trained and the basic form of professional training is course. This may be organized in a form of distance learning, which results in educational innovation and cost reduction.
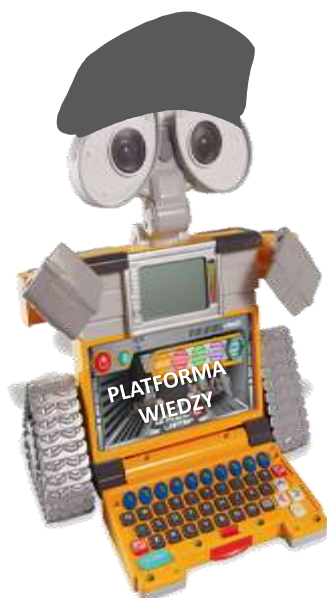
Future training adopting

e-learning technologies facilitates

effective task fulfillment

Distance learning is a process where the learner and the tutor are at a certain distance from each other[1]. Distance teaching involves various methods and a direct though virtual contact. Passing teaching content to dispersed groups being trained is the main characteristic. This method reaches beyond strict requirements of traditional teaching dependent on all participants being in one place and time[2]. At presence there are as many supporters as opponents of this method. The group of supporters include mostly enthusiasts and visionaries, for whom delivery (availability) of knowledge (from distance) is in a future the universality of education. They are those who define the fields and directions of its application. They

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[1] *Distance Learning Glossary,* http://www.elearners.com/ resources/glossary.asp (15.10.2012)

[2] *Edustrada, Dział Metodyki Kształcenia na Odległość, sierpień 2001* http://www.edustrada.pl/index. php?section=nauczanie &sub=wprowadzenie

popularize distance learning at conferences and publications, build and develop new educational platforms and collect knowledge data bases.

There are also some opponents who claim that it is not possible to train people properly without personal contact with the tutor (trainer). They also raise the question of legal loopholes, lack of regulations defining copyrights as well as payment regulations for authors of teaching materials created and placed on e-learning platforms. Free access to these materials and lack of remuneration do not encourage to work. This time-consuming work on designing knowledge data bases (teaching materials), theoretical and practical knowledge necessary for this is not priced according to law and is simply charity. This factor hinders development of e-learning. Also training companies invest money in creating e-learning training courses very carefully. The present stage of e-learning development and economic benefits force this relatively cautious (limited) approach. Managers in training companies estimates e-learning enterprises to be rather risky. Technological advances, competitive market and ensuring universal education of society will influence development of e-learning, popularize and make it attractive. Popularity, availability identification of needs will facilitate ensuring indispensible means and forces to provide education in that form. The extend of training enterprises together with the shortage of financial means create the necessity to gain knowledge and use it in a new way. The motion is: gaining knowledge in a traditional way should be extended and organized differently from now on. This may be achieved by future trainings which combine traditional forms and modern technological solutions i.e. e-learning. This solution facilitates fast and effective delivery of knowledge from the provider to recipient and using this knowledge at any place and time. All these assets make e-learning fully adaptable for education in many fields. It may be seen as an integration of actions to provide theoretical and practical solutions for supporting control, completion and supervision of many processes. The points discussed here are: how to train by distance learning, how to provide unified teaching materials including definitions, terms and concepts and the procedures. Adopting e-learning in many fields yields savings and is helpful in training any number of personnel in a relatively short time.

Basic factors triggering the fast development of distance learning are: searching for effective methods of teaching people located in different places, the need for new skills and additional training, just-in-time education and increasing importance of knowledge and skills. New sources as the Internet access, technological advances, multimedia development, communication tools, increased bandwidth, better quality of online teaching materials and higher standards for course designing are also significant.

Due to the Internet anyone who has the access to it may enroll to the classes (training) and gain knowledge. People can be trained everywhere at work, at home, in a café, park or while travelling. This modern solution can be applied on all teaching stages ranging from planning, designing, implementing, distributing and promoting to assessing and formulating findings. It also gives possibility to cooperate with other participants of the course being in a distant and different place, room, building, city, country (or even if necessary) on another continent. This method also integrates training process with other processes in the organization, institution, company or corporation. When using it one can easily define what a worker at a given post (workplace)should know and in what courses participate.

Development of the Internet and multimedia has led to increased interests in distance learning. This form of teaching varies from the traditional ones and affects also people: trainers and trainees. Distance learning stems from the concept of combining trainees' own efforts and teaching support of the trainer as a tutor, advisor, mentor, expert or consultant. The trainee decides themselves about the teaching process and content to much greater extent than in case of traditional learning. They must be more self-disciplined as well.

E-learning comprises the whole range of training forms with various sources and teaching methods. Single modules are usually prepared in a text form and include elements which make understanding easier such as multimedia, pictures, colorful boards, audio commentaries, animations, short film extracts, expert advice and even chat. In a teaching process consolidation of previously gained knowledge is equally important. For this purpose the practical solutions such as: exercises, tests, simulations, quizzes are used. All these elements help to check but also show how to put the theory into practice or how much time to allow for a given material.

The most important benefits from adopting e-learning methods are[3]:
- central coordination and management of courses, their full availability for trainees, which is now possible on the level of designing, distributing, accounting and controlling
- standardization of knowledge and information resources, acceleration of transferring new knowledge thanks to training in any place with immediate correcting or providing information tailored to the needs
- enhanced efficiency of training processes by introducing appealing alternative teaching methods, easy remote controlled access to knowledge for recipients without time and space limits

[3] J. KUCK Nowoczesne technologie w logistyce, AON, Warszawa 2013, s. 168-169

- extending, completing, and checking knowledge acquired through traditional means, building up new skills easily by applying *blended learning* method
- high level of effectiveness by adopting testing tools and certificates and free contact with experts
- discreet and stress-free training process provided to a student at any time and place
- better use of resources thanks to detailed analysis of a single person or group competence and skills and matching training process to individual needs of participants
- cost reduction of preparing teaching materials by using tools for creating individual courses
- financial benefits thanks to reducing business trip expenses, eliminating travelling and accommodation costs
- better use of technical and academic capacity of universities and scientific institutes (scientific works, analysis, researches, studies including multimedia and presentations).

Apart from advantages there are also limitations of adopting e-learning[4]:

- required access to the infrastructure (computer, network) and basic computing skills including good writing skills for solving tests and participating in forums
- high initial costs of preparation of infrastructure and teaching materials
- independent training needs, higher motivation and better time management than in case of traditional training
- in some cases traditional classes are indispensible (computing courses, leadership courses or others requiring practical field trips)
- effective introducing of this methods needs series of organizational (and technical) actions. The most difficult, however, is changing mentality and habits of tutors as well as trainees.

E-learning works very well for teachers, managers, instructors who improve and enhance their qualifications. These groups are "educationally mature" and have their own well-tried self-teaching habits thus enquire new knowledge easier.

Using this method is extremely positive for people who want to extend their education and are determined enough to climb the career ladder. It may serve as a component of traditional methods of teaching for those who use new knowledge and want to develop their qualifications.

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[4] J. KUCK Nowoczesne rozwiązania w zakresie bezpieczeństwa wewnętrznego, wyd. UKiP J&D Gębka, Katowice 2011, s. 96.

In terms of availability distance learning courses may be divided into **synchronous** and **asynchronous**. At the asynchronous courses there is no direct contact between a tutor and trainee. Trainee gains and checks knowledge independently. Tutors only supervise the progress and pace of the teaching process. These courses use the teaching materials on CDs or in the data bases. Communication between an instructor and course participants takes place through e-mail or discussion groups. Synchronous courses are run in a real time. Participants contact an instructor and other participants. This course may take single session or several weeks, months or years. These courses are organized through the Internet, videoconferences or two-way radio broadcast.
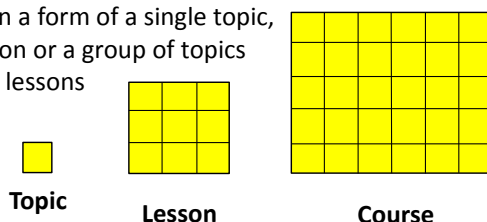
In terms of the form courses may be divided into: **closed and open**. Closed courses are ordered by big organizations to train people inside the given institution or company. Open courses are designed for wider groups, e.g.: professional groups, age groups or whole societies.

From the technical point of view one can distinguish **tailor-made or off-the-shelf courses**. The first ones are design to meet to the individual needs. Off-the-shelf courses are ready-made courses with basic professional materials.

E-learning courses are built up from modules called teaching objects. The structure of the course is composed with topics which are the sub-components of the higher elements – lessons and lessons are the sub-components of units. Every element constitutes complete, independent part of the course with its own defined aims, training activities and testing elements. This flexibility allows to compose them freely, modify and design new courses and programs.
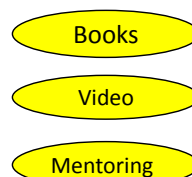
Course semantics

For most of organizations a course may be in a form of a single topic, lesson or a group of topics and lessons
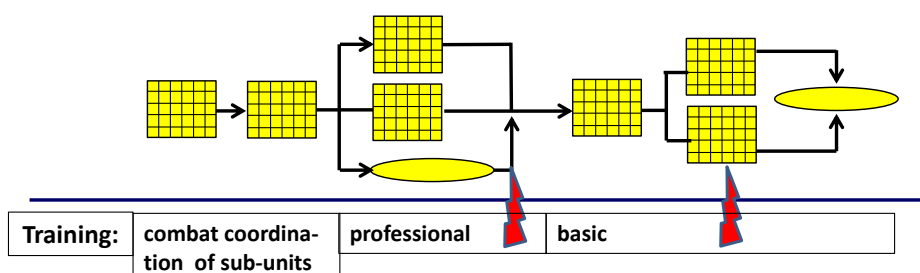
Topic   Lesson   Course

Events

Any defined training event

Books

Video

Mentoring

Syllabus: The group of topic/lessons/courses and/or events

| Training: | combat coordina-tion of sub-units | professional | basic |

Certificates

The group of topics/lessons/courses and/or events limited within timeframes with results and reports

Source: *the material by WiedzaNet company*

Graph 1. A diagram of the course structure (model)

Designing a practical system of knowledge management effectively requires a lot of time, engagement and formal preparations. Before the training project is started the real needs should be identified.

Training projects are created on the basis of the analysis of needs of the organization or institution: workers' qualifications and experience and plans for its development. The key elements of distance learning are:

- **trainees, participants,**
- **instructors/ moderators,**
- **organization**.

The needs, level of knowledge and skills are assessed and verified with traditional or e-learning solutions and afterwards the aims defined. Collected information about requirements and expectations are the basis to set the educational aims for single teaching modules.

E-learning facilitates training (teaching) by fast and effective transfer of knowledge from the provider (an instructor, teacher) to the recipient (a trainee) and using this knowledge at any time and place. This solution involves application of modern technologies to create and distribute knowledge (data, information) and enhance the level of education in many different fields.

E-learning is cheaper than traditional courses as the costs are incurred at the beginning of the course and spread out among all participants. Everyone having a computer and modem can enroll to the course on the Internet and gain knowledge this way. This form of teaching is convenient as it may be organized almost everywhere. This solution helps to integrate training policy on the single organizational levels responsible for security with the management processes of given institutions and organizations. It is also possible to identify what every worker with given responsibilities should know and which courses should take. Also the scale of economic effects and organizational effects in the future is clearly visible when the time necessary for training one thousand people and then whole institution or organization (military units)is counted for traditional and e-learning methods and compared simultaneously with costs. E-learning is more effective and appealing to trainees due to adjusting the course to individual preferences and expectations, providing information for self-teaching or introducing the "knowledge refreshing" or revising mechanism after completing a traditional course.

It is difficult to imagine introduction of e-learning in corporations and big institutions without the advanced IT system supporting many functions. These functions include: defining needs, planning the training offer, creating teaching material, running courses and testing, managing the content, distributing courses, managing educational process, submission and approval system, monitoring progress, registration of courses, analyzing the assessment process, transfer data about acquired qualifications to the workers' files and central database of HR.

The range of e-learning activities may be discussed in three dimensions: **people, knowledge and communication**[5]. Each of them is in scope of IT solutions built up for single needs and expectations of an individual client. Generally, teaching materials provided in e-learning are in the form of a course. This course content has precisely defined structure, enriched with different interactive and multimedia elements which are to enhance the quality of training[6]. This system includes various solutions for the analysis and full control of the training process. Thus, proper designing of the e-learning course is one of the key factors influencing the successful introduction of e-learning in an organization or institution. It demands a lot of work but the effects may often surprise the authors themselves. The process of designing an e-learning course may be divided into the following consecutive stages[7]:

- creating the general concept
- working out and verifying a training model
- preparing and sorting out the materials
- planning the syllabus
- defining a method and the way of providing the material
- designing the teaching modules
- testing and assessment

There are 17 rules how to design a good online course[8]:

- information about the course is provided online, people interested in it have an access to the description of this course and the person responsible for further details

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[5] *Potęga możliwości, e-learning w codziennej praktyce liderów*. Materiały z III Międzynarodowej konferencji *e-learningowej.* Warszawa 2008.

[6] P.Tyrała, A. Olak, *Prakseologia w edukacji dla bezpieczeństwa,* Wyd. Amelia, Rzeszów 2012, s. 215-216.

[7] J. KUCK Nowoczesne technologie w logistyce, AON, Warszawa 2013, s 175.

[8] A. Chmielewski, A.K. Stanisławska, *17 elementów dobrego kursu online*. http://www.puw.pl, Polski Uniwersytet Wirtualny, (02.12.2012)

- every course consists of pre-training in navigation and using the functions; this pre-training should be about how to use the course and also how to communicate with other participants

- the basic description of a course includes: title, name and contact data of the person running the course, starting date, length of the course and estimated time the participant should devote, bibliography, materials and description of tasks and content, exam schedule and assessment system

- the materials are presented in a simple, clear, appealing, dynamic and well-organized way with visual materials and multimedia tools

- reference to the interesting websites should encourage students to explore other content connected with the course

- single hyperlinks expand basic information and the transition from one lesson to another is fluent

- presented materials are interesting, colorful (graphics, films, team work or project, discussion groups)

- while designing the course one should consider different learning styles (visual, audile, kinesthetic)

- the material is logically presented and the navigation simple

- communication with the tutor is fast and easy

- there is possibility to exchange information via chat, open discussion

- the course must attract trainees' attention and keep them interested

- online materials must be professional as they reflects on the quality of tutors' work

- passage between pages is fluent

- the experts from outside may take part in the course

- testing should be relevant to the type of course, e.g.: giving short time for the answer

- a tutor monitors how often and when a trainee uses a course.

To rise to new challenges of the XXIst century the organizations and institutions should employ well trained and prepared workers. Some workers are expected to develop their qualifications continually. Limited financial means creates the necessity of adopting the most effective ways of gaining knowledge. In practice following the example of universities e-learning in organizations and institutions can be organized by the MOODLE platform (Modular Object Oriented Distance Learning Environment). This platform is a modular, dynamic, object-oriented teaching environment designed to create and run courses via the

Internet. MOODLE is an interactive and modern platform that may support traditional methods and at the same time boost their effectiveness. This solution gives possibility to built flexible courses with discussion groups, registers, surveys, materials, task and projects provided online. This platform is available in many languages, has simple interface and requires basic computing skills to use web browsers. It can be used for comprehensive online courses and as a supplement for traditional courses. This platform is applied at more than 36,000 universities and educational institutions and in 196 countries (the number in 2009).

The listed examples do not constitute all the possibilities, ways, fields or places where e-learning may be beneficial. Where to locate people responsible for preparation, collection and distribution of teaching materials is still an open question. One of the suggestions is to introduce this method of teaching quickly using the academic and technical capacity. Research studies and published papers would make sufficient teaching materials in this case.

E-learning is very successful in many countries. The point is to be well prepared both technically and mentally when adopting it.

The demand for training for special purposes has been, is and will be high. The access to distance learning will be getting easier and wider with the development of equipment, advances in IT. Thus, the vision of the next century as the age of permanent self-teaching will come true.

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