

Themata 3

E-learning Archaeology, Theory and Practice

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03

Methodology and e-learning solutions in 'Archaeological heritage in contemporary Europe' distance learning course *Jacek Marciniak*

Introduction

The launch of the 'Archaeological heritage in contemporary Europe' distance learning course, like the launching of every course where the didactic process is driven on the distance, involved undertaking a variety of decisions regarding learning/training methods and e-learning tools which had to be used during the course. In this process it was necessary to regard the specificity of the target group, subjects of learning and the kind of delivered contents. All that in the situation in which in compliance with the author's knowledge was the lack of other experiences regarding the use of e-learning solutions in the archaeological heritage area. During the analysis of the needs of the target group it was necessary to take into consideration habituations in the area of education, time accessibility and interest with the subject of the course. While analyzing the subject and contents of the course it was necessary to take into consideration the fact, that the contents on which learning was based were available before the construction of e-learning solutions and on how much of the contents of the training will be able to be in an easy manner adapted to the needs of the distance learning course.

The choice of the learning methodology and the use of e-learning solutions depended on many factors. Furthermore, during the organization of the course there were available numerous solutions and methods in the sphere of education. This results from the fact that for many years along with technology development different approaches to building the didactic process with the utilization of e-learning solutions were shaped. At the present

moment different solutions are available, where only some of them are treated as effective, comfortable and able to use the available technology well.

In the 'Archaeological heritage in contemporary Europe' distance learning course Web Based Training (WBT) and Facilitated e-learning was accepted. In the accepted model distance e-learning training is realized in the asynchronous mode i.e. there is no need for trainees and teachers to be by the computer at the same time. Facilitated e-learning found that the basic hardship of the training will have to rest on the didactic contents provided to the trainee in electronic form.

Model of distance training

The training model proposed for conducting the distance e-learning course 'Archaeological heritage in contemporary Europe' took into account the needs of the target groups, their accessibility and training habituates. Before proposing the final model, available technical and methodical solutions were analyzed, and after that such solutions were chosen which seemed to be the most suitable.

Overview of distance learning methods

E-learning is a form of the distance education in which the development of skills and knowledge is realized through the use of modern electronic technologies. E-learning is a wide conception, defined in many different ways depending on the kind and the role of the technologies used in the education process. In this day and age, e-learning is such a form of education in which during the didactic process computer and network technologies are used.

During the adoption of e-learning solutions to the needs of the 'Archaeological heritage in contemporary Europe' course accepted, that the didactic process will be conducted with the utilization of the internet network. Such a choice gets out of the generalities of the internet network and to the comparatively cheap access from work and at home. Such a choice at the present moment seems to be rational. However, still 10 years ago it would not to be so self-evident. At that time e.g. video-conferencing solutions were eagerly used based on dedicated ISDN interfaces (see e.g. Belanger, Jordan, 2000). However, the popularity of the internet has caused this medium of communication to be used more often today. In connection to the above mentioned foundation in further considerations about e-learning solutions, all other solutions (e.g. video-conferencing, educational television, training with the

use of cd, etc.) will be skipped. Each time during the implementation of the e-learning solutions based on the wBT approach, the analysis of the approach model of this kind of education on two surfaces has to be conducted:

- > What part will be played by the teacher in the didactic process;
- > What manner of the communication among participants of the didactic process is possible.

Analyzing the roles played by the teacher in the education process, the following approaches can be distinguished (Horton, Horton 2003):

- > Instructor-led training – this is the model where the teacher uses Web solutions to conduct conventional classes with distant learners; in this model the teacher is a source of the knowledge in the didactic process;
- > Facilitated e-learning – the model where the teacher supports the process of the education, sources of the knowledge are didactic materials delivered to the trainee in electronic form;
- > Learner-led training – the model where the teacher does not appear, the source of the knowledge are didactic materials delivered in electronic form, the trainee works individually, the progress of his/her work is stored in the central IT system.

The postulate that in the didactic process conducted by distance learning the teacher was a source of knowledge means that the meetings with trainees will be conducted on-line through the use of a camera and a microphone. His/her own lecture will be supported with PowerPoint slides displayed with the picture of the teacher on the trainee's computer. The trainee can at any moment enter into interaction with the teacher using e.g. chat or e-mail or it is possible to communicate through a voice channel.

The postulate that materials in electronic form are a source of knowledge means that such materials have to be elaborated (or gained) before the beginning of the training. Then they will be made available to the trainee through the dedicated IT system, or as regular web pages. The situation is analogous to conducting the didactic process on the basis of the schoolbook which fully answers the needs of this process.

The second of mentioned types of division refers to the manner of the communication between participants of the didactic process (Driscoll, 1998). There are two possible approaches:

- > Communication is realized in the synchronous mode – the model where

all participants of the didactic process (teacher, trainees) must be gathered at the same time (but not in the same place) to be able to participate in the training, the work is realized with the speed imposed and controlled by the teacher. An example of this type of communication model is lectures led by means of videoconferencing solutions;

- > Communication is realized in the asynchronous mode – the model where to participate in the didactic process participants do not need to be at the same time, however they use the same resources in the electronic form to learn individually at any time and at their own speed (tempo).

Joining methods derived from the above two quoted perspectives we will obtain the model of the distance education which will be fully referred to the needs and possibilities of the target group (Marciniak *et al.*, 2007). There will be the possible connection in the instructor-led training model with communication in the synchronous mode (e.g. on-line video-conferencing meetings), or to asynchronous (the access of trainees to lectures videotaped and received by them at any time, the on-line meetings regarding the tutorials will be realized during the chat session at the appointed time). Doubtless to say, not all connections are possible: learner-led training will be always in the asynchronous mode.

Another model regarding the conducting of distance training quoted is the so-called blended learning in other words such a model of the didactic process where participants of the course besides the activities accomplished by distance learning have also the possibility of participation in traditional meetings with the teacher. The role of traditional meetings can be very different: they can be used to deliver the most important part of the knowledge, the e-learning meetings will be used to introduce the didactic process, or as a method fixing particular contents. The inverse model is also possible: traditional meetings will take place at the beginning and at end of the course and their role will be to activate a group and to sum up all of the didactic processes, while the basic contents will be delivered during distance courses. What model will be chosen is relative to the specifics of the target group, didactic needs, character of the course, the experience of teachers and students and (and perhaps first of all) the possessed budget.

Describing different models of e-learning solutions, it is important to mention also the approach where such solutions are used as the supplement, or extension of lessons led by traditional methods. In this approach, all of the

didactic process are conducted in the traditional model in which all didactic contents are delivered by means of traditional (not e-learning) didactic methods. E-learning solutions serve as support e.g. the knowledge of trainees can be tested by means of automatic tests; the teacher makes available the materials by means of the IT system in the electronic form (e.g. PowerPoint presentations), students obtain additional contents by means of technological solutions which supplement or extend lessons conducted traditionally, etc. It should be clearly marked that such a utilization of e-learning solutions is something indeed different from the approach presented earlier. Models introduced earlier have to replace the traditional model. The choice of such methods will influence not only the affectivity of the education, but are also different by calculating teacher and student work hours.

Characteristics of the target group

The training called 'Archaeological heritage in contemporary Europe' is addressed to the group of specialists working on problems regarding archeological heritage. This group includes professionalists in the sector of the protection of archeological heritage and other persons connected with this sector (planners, engineers, administration, etc.). Participants of the course can be also students interested with the subject matter regarding archaeological heritage protection. The model of conducting the distance course was elaborated mostly for the target group i.e. working persons. This results from the basic aim of the course – the elevation of the competence of specialists in these areas in which appear new techniques and methods. Of course the proposed education model can be also efficiently used to conduct training courses for students. However, if the students were the target group, the model of the distance education would be essentially different.

For adapting the model of distance education it was indispensable to regard the specificity of trainees to choose the most suitable methods of their education. From the methodology viewpoint it was essential that the following characteristics of the target group were followed:

- > The geographical dispersion – in Europe employees of the archaeological heritage protection sector are working in institutions dispersed over of the country. In countries with a large area, the distance between them can be large e.g. in pilot training conducted in Poland, participants were persons working in Przemyśl, a city which is about 600 km from Poznań, where there were teachers;

- > The lack of time – training is addressed to persons who because of their busy professional activity have not much spare time;
- > The lack of the possibility of a comparison of experiences with other specialists from the same field – the geographical dispersion and the fact that specialists working on the archaeological heritage protection are often only specialists in the environment where they work, does not give the possibility of confronting personal problems and needs with other specialists from the same field.

From above results directly that:

- > In the training process there is no possibility to organize traditional meetings, which excludes the blended learning model;
- > The form of education must be attractive, not to give to participants having at his/her disposal with the small quantity of time the argument regarding leaving the course because of a 'wearisome' formula, this statement encourages to conduct courses with the use of multimedia in which at a suitable approach it is possible to obtain an attractive product for the trainees;
- > The lack of the possibility of opinion exchange with other specialists from the same field stimulates the introduction of solutions giving the possibility to conduct discussions from distance by means of discussion forums.

The project model of education

The wide range of the possibility regarding the organization methods of a distance e-learning course in the internet environment and the character and expectations of the target group had led to the proposal of modeling and conducting the didactic process with the following characteristics:

- > Web-based training – training is intended to be conducted in the internet environment, for the general accessibility of this medium;
- > facilitated e-learning – the didactic process will be conducted on the basis of didactic contents delivered in electronic form as multimedia and interactive e-learning courses. The role of the teacher will be supporting the didactic process and to activating learners, the chosen model will assure the homogeneous level of the instruction thanks to aggregated content in the form of e-learning courses adapted also to the temporary accessibility of the course participants;

- > multimedia and interactive e-learning courses, in other words didactic contents organized in such a manner that give the possibility of the replacement of interactions between the teacher – the trainee through the interaction didactic content – the trainee, solution chosen to activate persons learning through an attractive form;
- > the lack of traditional meetings – the lack of the possibility of the organization of meetings of this type because of geographical dispersion and the large workload of the target group;
- > communication in the course is fully asynchronous, to give to trainees the possibility of work chosen by them in available time and convenient place;
- > the possibility of opinion exchange on the discussion forums to give the possibility of confronting practical knowledge between course participants and as the essential element of the trainees stimulation.

Tools used in the distance learning process

Model accepted for the course regarding leading the didactic process extorted to choose particular tools and technological solutions. These tools included:

- > A package of 15 multimedia e-learning courses;
- > The LMS/LCMS system supporting the didactic process conducted by distance;
- > Access vortal;
- > Syllabus.

Multimedia e-learning courses

In compliance with the accepted methodology for conducting the distance didactic process i.e. assisted e-learning, didactic material in electronic form constitutes the basic element around which all training activities are led. According to what we said earlier, the basic activity of the learner is oriented on independent work with material; remaining activities (work on the forum, essays, and consultations with the teacher) are always realized in connection with the contents delivered to the trainee in a multimedia and interactive e-learning course. The decision in which form the essential contents will be provided to learners influences essentially the efficiency of the whole didactic process.

For the purpose of reaching the best effects the authors decided that

didactic contents would be delivered to learners in the form of multimedia and interactive e-learning courses. Multimedia and interactive e-learning courses (multimedia e-learning courses or e-learning modules) are such, that organizing the content in electronic form is the most suitable to conducting the courses in the WBT model. Such courses are built in a form invoking the delivery of the information on the internet i.e. in the form of the utilization of multimedia and interactive elements. The courses are built in technologies which are intended to starting the web browsers as DHTML (dynamic HTML) or flash technology. Particularly by multimedia e-learning courses we understand the organization of the didactic content which possesses the following characteristics:

- > The course contains multimedia and interactive elements enlarging the attraction of delivered contents and enlarging education efficiency;
- > The course has a hierarchical structure adapted to the internet education needs, realizes the rule of the partition of the content on independent units of the knowledge so-called Learning objects;
- > The course is prepared to upload in the learning management system through recording it in the popular standard of the didactic content representation e.g. SCORM.

Multimedia and interactive elements in the e-learning course should always determine the supplement and the enlargement of the essential content. They should never have the entertainment function separated from the narration led in the text. They are introduced for the visualization of dynamic processes, phenomena, or illustrate dependences between issues discussed in the processes (Carliner, 2002), (Horton, 2006), (Kemp *et al.*, 2004). Learned by means of elements of this type permits the learner to participate in interactive simulations i.e. learning by doing. In most situations these elements serve not to be a linear introduction of the content. They can be also put onto building elements making possible self-testing of the knowledge of the learner and testing of this knowledge as eg. simple single/multi choice tests, but also as complex simulators testing and invoking the character of the content delivered in the course (e.g. simulators of the control of particular tools).

The production process of the multimedia e-learning courses differs essentially from the simple digitalization of texts being seized of meritorious specialists and make available as e.g. files in pdf format. Such courses are in

fact the 'electronic books' which permit the learner to enter into interaction with the essential content in compliance with the algorithm designed by the author. This kind of interaction in the multimedia e-learning course in the situation in which the learner works with the course individually in the asynchronous mode takes place with the interaction on the line trainee – teacher met in the traditional class. The accessibility of the interaction in the e-learning course in an essential manner bears on the efficiency of the teaching. Attention can be returned also to learning by doing methods accessible in multimedia e-learning courses. Such a construction of a course fragments; the learner has the possibility of independent exploration of knowledge and experiencing it practically. This approach differs from the more 'passive' approaches in which the learner must enter fully into the style of the narration forced by the material e.g. traditional lectures recorded by video and delivered to the trainee. In the case of such organized lectures there is a lack of interaction with content, there is also no possibility of interaction with the lecturer as in the traditional classroom.

Discussing multimedia e-learning courses, it is very important to talk about their structure. Such courses should have a hierarchical structure organizing the didactic contents recorded in small portions of knowledge, so-called 'learning objects'. The hierarchical structure should be in the transparent and (largely) lineal manner when the contents are delivered to the learner. The construction of a course based on learning objects means, that the essential content is disjoined apart between small 'isolated' parts of the material which consist of the coherent whole for the embedment of their berths in the hierarchical structure. The construction of the course with learning objects organized into the hierarchical structure is essential for education efficiency. This happens because the learner rarely will master all the contracted contents in the course during one session (one approach). Such a person will stop working with the course because of professional and/or household duties, or the realization of other activities connected to the course, etc. In consideration of this fact it is essential, that after a return to the work with the course after a break, the learner should in an easy manner find himself again and could quickly start learning without the frustrating search of the content. The good structure of the course and the readable partition of material will improve this process.

During the construction of the e-learning course it is important to decide, how to settle in the learning management system. Most simply will it be

recorded in the popular standard of the representation of the didactic content e.g. in the SCORM standard. Recording of the course in such a standard will assure the assignability between the LMS systems of different manufacturers, and will warrant easy maintenance (in the case of changes, this will be comparatively simple). Possible will be also the repeated utilization of each element of the course, if the author will acknowledge that the multimedia e-learning course should have other forms, e.g. if it is necessary to put into this course the components of other courses.

On the needs of the 'Archaeological heritage in contemporary Europe' distance learning course were built a package of 15 multimedia e-learning courses each have the characteristics quoted above (see Figure 1 and 2). The first version of the course was built in English, and then they were translated into the three following languages (German, Latvian, and Polish). Total 60 e-learning courses were built. Each course was recorded in the SCORM 1.2 standard, which guarantees the possibility of their actuation practically on every professional system supporting the process of education by distance learning. All courses were built in compliance with a philosophy of the division of content on learning objects. Part of the material contained in the single learning object demands from the trainee 5 to 15 minutes of work for mastering the purpose. Work with the single e-learning course should take from 1, 5 to 2, 5 working hours.

Learning management system – the system supporting conducting distance learning

In the simplified form the conduct of the distance training process on the internet would be able to be realized without the utilization of any dedicated software. In such an approach, it would be available to use the same tools and solutions which are used during the designing of web pages. Supported with such solutions the didactic process would consist of deliveries to trainees the didactic contents in the form of web pages. Such an approach has however a lot of inconveniences: the teacher would not have information of who uses what from his/her materials, would not know whether trainees who should participate in the course are really participating or not. Furthermore, the tools used for the communication would not be accessible in one place; there would be also no tools controlling the learning progress. To avoid the above mentioned inconveniences during the organization of a distance course it is important to take advantage of the dedicated system information technology



supporting the process, LMS (Learning Management System) with functions of the LCMS (Learning Content Management System) system. It is vital also to reflect over the manner into which the system will be started and maintained during the course. There are the following available approaches: it is possible to independently start the system of this type, or the start and the maintenance can be done by computer experts (internal IT department), or simply let this task be done by the external entity (external IT team).

LMS/LCMS system functionality

The LMS system supports the organization and the conduct of the distance didactic process in the following areas:

- > Users and process of training creation management;
- > Building, management and publishing of the didactic content;

Figure 1 & 2 Examples from the website www.e-archaeology.org



- > Didactic process management and progress monitoring;
- > Facilities of tools for communication.

The mechanisms of user management and the management of training creations allows to register users in the system and build training groups in the model similar to traditional courses. By the term training we understand the didactic process which ties the group of trainees, specific didactic materials and the teacher on the specific period of time. Flexible mechanisms of the training groups creation are especially essential in the situation in which one user of the system is simultaneously a participant of many courses. Flexible mechanisms of the training management are also useful in the situation in which the training is based on the precise schedule and specific parts of the course which should be made available to trainees only at a specific period of time. It is also important that the system should improve the individualizing process of the course for indicated trainees. In distance learning it often happens, that the student stands by compulsory time-limits. The lack of flexible mechanisms of the IT system can make it impossible to direct the trainee in such a situation on an individual path (e.g. the prolongation of the access to essential material for one trainee). In the didactic process conducted within the framework of the course 'Archaeological heritage in contemporary Europe' the flexibility of the trainees and course

management was very essential for the fact that training sessions had consisted of several parts; didactic materials and other resources (e.g. discussion forums) were provided to trainees at a different period of time and were not accessible all the time. Taking into account the complexity of the process (the courses were conducted in 5 countries in different periods of time, including different cultural habituates regarding the accessibility to the contents and resources of the course) without flexible tools of IT technology the management of the whole would be inconvenient.

Other functional areas of the systems supporting distance education are mechanisms that enable flexible building, management and publishing of didactic contents. It is very important, that the IT system allows making available content in the multimedia e-learning courses form, as well as being allowed in the distribution of all other materials in electronic form (Word files, pdf files, etc.). In the case of e-learning courses there is no need that they must be recorded in the standard of the didactic representation (such as SCORM) to be processed by the LMS system. The courses would be only organized as a pack of web pages and in this form would be provided to the trainee. This simplified solution would not be however profitable. The recommendation, that the LMS system has functionalities of the courses recorded in standards of the didactic contents representation, gets out of the fact that it gives this the possibility to launch such courses on platforms of different manufacturers (which in the situation of the aging of IT systems and the possible change of one system one second is very essential). First of all, such an approach gives the possibility to track the progresses of the trainees during the realization of such a course. Recording the course in the SCORM standard allows for huge possibilities.

During a discussion of the anticipated system functionalities for distance education in the area of content management, it is proper also to analyze the functionalities provided by LCMS systems (Learning Content Management System). While in a pure form this kind of system appears rarely, however, the functionalities of this class of systems are often met in systems for the distance education of the LMS class. One of the needs of this is the elaboration systems integrating functions of LMS and LCMS systems we will qualify as LMS/LCMS. To the essential functionalities of LCMS systems is the possibility of the creation of didactic content directly in the system and so organizing it according to requirements. This solution enlarges the possibilities of the LMS system, where the didactic contents are only processed as whole pack-

ages. LCMS systems give also the possibility of the transformation of didactic content on the large level of the granulation (e.g. on a learning objects level, or even on the level of learning objects elements). In the context of conducting the distance courses, the LCMS class systems functionalities can be for example useful in the situation in which it is indispensable to add to the imported didactic content (e.g. in the multimedia e-learning course) a new (other) parts of material.

Another functional area is the functionalities supporting the management of the didactic process and monitoring of trainee progress. These mechanisms let on the one hand to accumulate the information about a trainee's progress (but also about teacher activities) and to access this knowledge in the form of reports. Furthermore, the didactic process management is a mechanism supporting the learners activation e.g. control-work evaluated by the teacher, the mechanism of home exercises. A good reporting system should give the possibility of the inspection of progress of the trainee in a cross-sectional way. The reports about trainees logging to the system, progress in the realization of each parties of material (number of loggings into resources, time, etc.), the information about progress on group work (the time spent on forums, number of statements), etc should be accessible. Reports should be cross-sectional i.e. should show the progress of all learners in one training, or individualized for a chosen trainee. The flexible reporting system really will improve the work during the course supervision, and will give the possibility of the immediate responsiveness on progress (and in most cases rather their lack) of the trainee or groups of trainees.

The last functional areas of the systems for distance education are tools supporting the communication between trainees, and a teacher. In his kind of system there are integrated tools such as: the forum, chat, electronic mail, and calendar. Accessible are also often other functionalities such as video-conferencing modules (in the streaming technology), the screen sharing, news, etc. In the model of the training realized in the project were used two tools for communication: forum and news. The first tool gives the possibility of the discussion on a particular subject in the mode of asynchronous communication. This form of contact was introduced as an essential element of trainees being activated and giving the possibility of leadership on the discussion of subjects connected with the course. News is the functionality that gives the possibility to the teacher on informing the trainees about important events during the course (availability of the new course, the

beginning of the discussion forum, etc.). It is important, that the news mechanism would be managed directly by the person conducting the didactic process, i.e. by the teacher. The good utilization of the news mechanism gives the learner quick information hereof what he/she should perform on the given stage of the training. This information is accessible after the logging-into the system. Discussing the functionalities of the systems for distance e-learning, it also important to say a few words about e-mail. Most of platforms offer their own e-mail systems, however, it is preferable to use during the course e-mail addresses used by trainees on an everyday basis. Aside from which e-mail address will be used, one ought to mark that contact by e-mail is not excessively anticipated in distance training. This mechanism of communication should be used only to settle urgent and individual matters. The didactic process should be conducted in such a way, that most of the communication on essential subjects should take place in discussion forums, and the organizational information distributed to trainees (through the news mechanism, syllabus, dedicated forums) that trainees will not be forced to ask for important information by e-mail.

In the training a system for distance education called Edumatic was used which had described the above characteristics. In particular this system had the following functionalities:

- > Advanced mechanisms of the groups management and flexible mechanisms for course organization and individualization;
- > Processing mechanisms for multimedia e-learning courses in the SCORM standard (including SCORM 2004), including LCMS system functions:
 - Importing and the delivering e-learning courses in training sessions;
 - Possibility of the modification of courses imported to the system (e.g. creation of a new course based on courses founded in the repository, adding to courses ready to use tests);
 - Tools for the delivery to trainees of files in electronic form;
- > Tools for tracking the activity of trainees and for reporting purposes:
 - Activity of the trainee during the e-learning course (time spent in the whole course and each units – sco, the time of the last entry in each unit of the course, number of visits, etc.);
 - Activity of the trainee on forums (time spent, number of statements);
 - General information about logging into the system;
- > Communication tools available as an inseparable part of the course:
 - Forum for asynchronous discussions;

- News to placing actual information about the course;
- Tool for the quick contact with trainees (such as e-mail messages);
- Calendar;
- > Tools for knowledge verification:
 - Tool for managing homework exercises by trainees in a definite period of time;
 - Tool for the self-testing of knowledge, in the situation when it is needed that students can check their knowledge by answering multiple choice questions with yes/no answers;
 - Tool for examining the situation in which the progress of trainees should be evaluated by the teacher;
- > Tools for group work – space for file exchange between trainees.

Models of LMS/LCMS systems delivery

An important decision which must be made before the implementation of the e-learning solutions is the decision regarding which rules will be followed and maintained in the technological platform of the system. Implementation and maintenance of the learning management system, the same as implementation and maintenance of every other IT system is a sensitive undertaking and requires very careful decisions. There are three accessible solutions:

- > Standalone implementation of the platform on the possessed computer hardware and the maintenance of such a platform for the needs of conducted courses;
- > Entrust this task to the IT teams of the mother institution;
- > Entrust this task to the external subject entity.

The first solution seems now to be very attractive for many people anxious to start distance courses and possessing a little more than the basic knowledge about handling information technology systems. This attraction is strengthened by the fact of the accessibility of many systems for distance education distributed on an open-source license. The easy accessibility of such software means that it equally seems simple to understand the implementation and the maintenance of such a system. However, this is very wrong! Even if the system is efficiently installed, it does not quite mean that it is already ready to use for work. The system can be found properly prepared for conducting the course, if is properly scaled and configured (e.g. in respect of safety), as well as having suitable maintenance procedures (e.g. data backup). If we do not

think about these aspects, in the case of system failure or equipment failure (what happens often) and consequently of the lack of access to resources of distance courses, or data loss about the progress of trainees, the didactic process can be disturbed or simply break down. It is correct to reach for a second solution or even third one. Qualified specialists will take care of scaling the system i.e. to prepare the system to handle a planned number of trainees and properly configure it (e.g. they implement the suitable data security level). Such teams will be also responsible for data backup, and will start the system in the situation when technical problems appear (e.g. in the case of hard disc damage, database crash, etc.). Whether the implementation and the maintenance of the system will be entrusted to IT teams from the mother institution or 'external' entity is relative to many factors. In the situation when access to a distance e-learning course is realized via the internet, it is not important where the IT system is located.

During training sessions the third approach was used, i.e. all partners conducting the courses in the project (Germany, Sweden, the Netherlands, and Latvia) have used technological solutions physically located and operated in Poland (Adam Mickiewicz University). For the final participant of the course it was not an important matter. The technical support was also organized centrally in Poland and delivered to all six partners of the project.

Access vortal

Starting a distance e-learning course it is proper to consider the actuation of the additional tool of information technology – vortal. Vortal is a place in the internet which for course participants is the place of the access to a distance e-learning course. The role of the access vortal is:

- > The log-in to the e-learning platform (LMS/LCMS system, or other);
- > Make available information about the course (schedule, landmarks, etc.);
- > Make available all the information concerning rules of using an e-learning platform.

Within the framework of the project, access vortal for participants of the course was the vortal located on the internet domain: www.e-archaeology.org (see Figure 3).

Figure 3 Interface showing homepage.



Syllabus (training scenario)

The syllabus (training scenario) is the document containing all indispensable information for the trainee concerning the distance learning course. This document should be delivered to the trainee before the beginning of the distance course. The trainee should use it all the time during the course, always when the course enters into a new phase, when something is for him/her questionable, when technical problems appear, etc. The document serves so as a support for the working trainee, who is unable to ask questions directly during traditional meetings. It also improves the work of the teacher – if essential information for the trainee is not found in this document (eg. date of the return control-work), the teacher can expect a large number of questions on the same subject from different trainees. At adapting the syllabus it is important each time to learn what type of information will be most essential during the course, remembering that a trainee working individually may feel helpless, when there is no essential information delivered to him/her, or in case of technical problems making it impossible to find such information located only in the IT system.

The syllabus should contain the following information:

- > Information concerning the aims of the course and the competence level which the learner will acquire after the end of the course;
- > Requirements which must be fulfilled by the trainee so that he/she will be able to take place in the course (essential requirements, e.g. credits from other courses, familiarity with the use of word processor and technical, e.g. having a specific type of web browser);
- > Organization of the course with its legible division in parts (if such appear) and with the indication what resources the learner will use during each part of the course (e.g. the indication of e-learning courses names, discussion forums, etc.);
- > The course schedule with the indication of exact dates of the beginning of each parts of the course and dates on which will be available all resources on the basis of which the course is conducted;
- > Rules of the acknowledgement of the instruction is finished, in other words the information regarding what the trainee must perform to finish the course (e.g. familiarity with essential materials, participation in the discussion forums);
- > Information on rules of the credit (points and for what);
- > Rules regarding participation in the training:
 - Information regarding when each parts of material will be available;
 - Information regarding rules of communication (e.g. whether the trainee has the right to use e-mail and in what cases, what is the warranted time on the answer, where the information will be available, if in the schedule changes, etc.);
 - Information regarding rules in an emergency (e.g. the qualification of this when the trainee should acknowledge that the error of the platform appeared, the rule of conduct during the emergency situation);
- > Contact information to teachers and to the technical support team.

The syllabus can be constructed as a document in the electronic (pdf, word) form provided to the trainee before the beginning of the course, or as a resource available on-line, e.g. on an access vortal. Aside what technical form will be chosen and what the trainee should have accomplished to use the syllabus in the situation in which doubts of an organizational or technical nature appear.

On the needs of the 'Archaeological heritage in contemporary Europe' course syllabus which consisted of six documents was produced:

- > The base document determining the general frame of participation in the course;
- > Detailed documents, one document for each part of the course.

Such a partition of a syllabus issued, that the course had been divided in parts and because before starting the course one foresaw possible (small) changes in the schedule of the course. The course had a pilot character and there were possible small time displacements in the realization of each of the part (which in reality took place in small cases). Before the beginning of the first part of the course was delivered the base document and detailed syllabus for the first part of the course, and before the beginning of every following part of the course was provided in the syllabus concerning the guidelines of the work for this particular part.

It is important to point out, that on the needs of the course were elaborated separate syllabuses for each partner countries. They differed not only with appointed times and dates, but also with the methods of calculating points and with information of how to make the content available to learners.

Tools and education methods in the 'Archaeological heritage in contemporary Europe' distance learning course

The tools and methods described above were used in the 'Archaeological heritage in contemporary Europe' distance learning course. They were applied in such a manner, to superlatively take into account the specificity and needs of the target group and to guarantee the best educational effects. The foundations concerning the didactic process in the distance learning course are the following:

- > The didactic process is realized through the internet in the Web based training model in the assisted e-learning mode, i.e. the teacher supports the course, and is not a source of knowledge;
- > A central point of the course is the didactic material provided to trainees in the multimedia and interactive e-learning courses;
- > In the didactic process the teacher can use as a supplement other essential materials taking into account the character of the trained group, including the condition of the country where the course is being conducted;
- > The training is realized and based on the system supporting distance education – LMS/LCMS system;
- > An inseparable part of the course are forums, writing of essays and

consultations which have to activate trainees and support them in the learning process;

- > Progresses of the work is monitored by the teacher;
- > The lack of traditional meetings during the course;
- > The whole process of education is supported by distance learning; specialists and technical staff responsible for the maintenance of the IT infrastructure.

Organization of the course

The distance e-learning course operates under the name 'Archaeological heritage in contemporary Europe'. It was elaborated in such a manner so that it would be able to be conducted in six countries (Poland, Germany, Latvia, the Netherlands, Sweden, the United Kingdom), in four countries it would be conducted in national languages (Poland, Germany, Latvia, and the UK). Considering the good knowledge of English in the target group in Sweden and the Netherlands, essential materials would be available in English. The activities realized by trainees during the course were defined in such a way, that the duration of the course could be different. This is why the pilot course lasted from three months (Sweden) to six months (Poland). Such a need of flexibility within the range of the course duration issued different habituations and specifics of institutions starting such courses in different countries of Europe (the different courses will then be conducted within the framework of enrolling them into the program of studies in colleges, and other institutions when the instruction will have a character of vocational training, countries differ with the mode of the organization; the semestrial, trimes trial mode, etc.)

The whole course was divided in five parts. This division resulted from the specificity of the material (for the detailed description of the course – see A. Marciniak in this volume). The course was conducted basing it on the following resources and activities:

- > 15 multimedia e-learning courses;
- > 3 discussion forums;
- > 2 essays (one collective, one individual).

For the purpose of the legible information of course participants that the work with each resources and activities of the course has a character of regular classes (though the learning environment is different from the

Part	E-learning courses	Forum
Part 1 Theory of archaeological heritage	2	1
Part 2 Mapping of archaeological heritage resources	4	
Part 3 Valorization of archaeological heritage	2	1
Part 4 Protection and management	4	
Part 5 Politicizing archaeological heritage	3	1

traditional one), and not the free and obligors look over the contents (what the internet usually does) were introduced readable names for each activity of the working trainees in the distance course. The following names were introduced:

- > Asynchronous distance lecture – individual work of the trainee with multimedia and an interactive e-learning course;
- > Asynchronous distance conversation – collective work of trainees at the discussion forums;
- > Asynchronous collective homework – collective work of a group of trainees on a given subject aimed at writing an essay;
- > Asynchronous individual homework – individual work of the trainee on a given subject aimed at writing an essay.

Trainees had also the possibility to use individual consultations with the teacher through e-mail contact.

Trainees accessing to the given part of the course obtained access to all resources assigned to this part. However, not all resources were available at the same time. For example, if in the given part of the course were available several multimedia e-learning courses, they took place in definite distances (eg. one course every week, or every two weeks two courses). Similarly with access to the forum – the discussion should begin after the perusal of trainees with essential contents delivered in multimedia e-learning courses, in other words, mostly some time after the beginning of the given part of the course. Rules regarding availability of the resources in the course were different in different countries depending on the duration of the whole

Table 1 All activities during the course were available in each part of the course.

course. The trainee, for familiarization with a multimedia e-learning course had about one week, similarly with the discussion on the forum – assumed optimum – time is about 10 days.

An essential matter from the organization of the course point of view was the problem of access to resources expiring of the given part of the instruction after the course end. This problem was dissolved in different ways depending on the habituations of the particular training group and cultural conditionings. There were a possible two solutions in this regard: expiry of the access after the end of the given part of the course, or availability of resources also after the end of the particular part of the course. The first solution can be treated as the essential element of trainees activating. The rigor of making the trainee available to the resources he/she is forced into systematical work. This solution is recommended in the situation in which the duration of the course is relatively long – then mobilizing the students is essential. This solution was accepted during the course in Poland – the access to all resources expired after the end of the given part. Of course in the situation in which some trainees did not finish the work on time, the access was prolonged. However, this was always done individually and introduced to the trainee as just an incidental circumstance. In such a situation the access was prolonged for approximately 2 weeks. The lack of access to resources expiring is more optimum, in particular in the situation in which the course is relatively short and trainees will have delays in the realization of material. However, in such an approach there is the risk of leaving the course by trainees because the effect 'of too large an amount of outstanding work'. Aside from which solution will be chosen, essential is that the teacher will be commended over the process of accessing the course material. During these activities are useful good IT solutions for the automation of the access to the course resources process. This happened in the case of discussed courses – the access to the course resources management took place automatically after the initial configuration of the mechanism of the Edumatic platform. Despite this automation, the teacher could always depend on the needs of individuals to access the course resources, e.g. in case of trainee delays.

Trainees activation and role of the teacher in distance learning

The accepted education model, in our case assisted e-learning, forced to propose the certain manner of the trainees activation who issues form the character of a driven didactic process and are adapted to the potential of used

tools. Similarly, the role of the teacher in this type of course is essentially different from the role played by him/her in the traditional class, but also different from this which the teacher plays during the leadership of distance learning courses in the synchronous model.

Role of the teacher in distance learning

The role of the teacher during distance led learning according to the assisted e-learning model in the 'Archaeological heritage in contemporary Europe' course is as follow:

- > Monitoring of trainees progress with work with e-learning courses and progress of the discussion on forums
- > Beginning of the discussion on forums and the supervision of this discussion
- > Valuation of individual and group essays
- > Conformance with the work schedule and responding in the case of delays
- > The trainees activation

The monitoring of the learners progress is one of most essential activities of the teacher in the case of the assisted e-learning model. This kind of activity should be realized systematically and exactly. The correct analysis of the trainee will permit the teacher to determine the degree of participation of the trainee and the beginning of taking part if such an activity is necessary. For good monitoring of the trainee progress is very essential together with the support which is offered by the LMS/LCMS system. The more detailed reports the system offers the better. Also important is that reports give cross-sectional information on two surfaces: the information concerning a single student and information about the whole training group.

In the discussed course, for the trainee's progress monitoring purposes were used following reports offered by the Edumatic system:

- 1 Progress of trainees in the realization of the multimedia e-learning course (information available for a single trainee: the number of entries to the course, globally spent time on the realization of the course, the date of the first entry, the date of the last entry)
- 2 The activity of trainees in the realization of the forum (information available for a single trainee: the number of entries to the forum, the time spent on work on the forum, the date of the first entry, the date of the last entry, the number of the statements made by the trainee)

- 3 Progress of trainees in the learning object (information available for a single trainee: the time spent on the work in a given learning object, the number of entries to the learning object)
- 4 Progress of the trainee in the realization of all courses in the training (the following information was provided for the single course: the number of trainee entries to the course, globally spent time, the date of the first entry, the date of the last entry)
- 5 Progress of the trainee in the realization of learning objects for the chosen course (the following information was provided for each learning object: the time spent on the learning object, the number of entries to the learning object)

The above described and allowed for the systematical analysis of the trainees progress. Each time the analysis began from report 1 for the analysis of progress in the realization of multimedia e-learning courses and report 2 for the analysis of progress regarding work on forums. These reports showed the engagement of trainees: from the number of entries and amount of the time spent on the work resulted univocally who works more, and who less intensely. A deeper analysis for progress of the work in the multimedia e-learning course provided report Nr. 3. This report helps to analyze how the trainees worked in each learning section of the course. This allowed the teacher to get to know which learning objects are more, and which are less intensely studied by trainees. In the case when the teacher had a suspicion (after the analysis of reports 1 and 2) that the student did not work systematically, or simply wanted to check the progress of the chosen trainee he used report Nr. 4. This report permitted to check, that the student quit the work only in one multimedia e-learning course (if it happened), or in several. The very interested analyses provided report Nr. 5. This report allowed to check that within the given course, the trainee had worked systematically (e.g. showed whether times spent on the study following learning objects was similar) or not.

In case of discussion forums obviously alone monitoring, in other words reference only to the quantitative information, was inadequate. The role of the teacher was also the substantial supervision and moderating discussion on forums. In the discussed course it was accepted that the role of the teacher was the initiation of the discussion on thematic forums through placement on them with several threads with themes for the discussion. These themes determined the crucial element of the essential layer of the whole course.

Each one from teachers leading the course should formulate such theme in one thread on the forum into such a manner, that would be interesting, stimulate the discussion and invoke experiences of the training group and the context where the course is conducted (e.g. he complied with local/national conditionings). During actual work on the forum the task conducted by the teacher consisted of:

- > Moderating the discussion, including teacher involvement into the discussion as a specialist from the field explaining certain matters, summing up certain plots, or placing new (sometimes controversial) theses, if such action was necessary
- > Controlling the level of the discussion and maintaining the regulations of the forum – controlling that trainees do not use censurable words, whether the discussion is on the subject, whether it is driven within the framework definite by the teacher (e.g. whether students do not create new topics – in the pilot course this was not permitted – the discussion had to refer only to themes indicated by the leading teacher).

Within the framework of the course, the role of the teacher is also to evaluate essays (individual and group). The beginning of writing essays (in the discussed course there were a total of two essays) was determined in the syllabus, the teacher should signal this also by an e-mail sent to the trainees. An interesting problem to dissolve was the manner by which one should have to form groups for writing the group essays. In the pilot course in Poland this problem was solved in such a way, that students could on the dedicated forum show by their own preference regarding with whom they would like to write the essay (students 'knew' already virtually after a few discussions on the forum). Later, groups were formed by leading teachers. The return of essays to the teacher for evaluation could be realized by trainees by means of the homework functionality of the Edumatic system (this functionality improves the process of handling big numbers of essays, and gives the possibility to control the maintenance of terms for sending in essays), or by e-mail. This last solution was acceptable when training groups were not large.

An important area of teacher activity in a distance learning course is watching conformance with the course schedule by trainees. From the continuity of the didactic process point of view it is essential to fulfill all terms prescribed in the syllabus. If some changes took place relating to terms described in the syllabus, the teacher was liable for informing trainees about

those changes. Accordingly, what was useful was the functionality of the Edumatic system called 'Contact with trainees' which gave the possibility to send short text messages to all (or chosen) trainees who were on the course. The exercise of this task by teacher's e-mail is sometimes inconvenient; especially in the situation in which the group of trainees was dynamic because of the dropping out of trainees from the course (e-mail messages should not be sent to trainees who dropped out from the course). In the case, when the trainee was not able to finish his/her tasks, the teacher could individually decide what should be done further. First, he/she should activate tasks, and later, if there was a specified reaction from the student, he/she should e.g. extend the access to particular resources. In this last task in most cases teachers were supported by the support team who performed these operations in the systems.

Trainees activation methods

To provide effectiveness to the distance learning process, an essential task of the leading teacher conducting such a didactic process is activating the learning persons. Conducting a distance learning course in the asynchronous mode is always threatened by the fact that the trainee can always resign from the course. The reasons can be different: the lack of direct contact, confusion consequential from the delusion of freedom during doing work at any time, the lack of motivation in the form of regularly conducted classes in one term, or such factors as resigning from courses conducted with traditional methods. During the remote instruction the teacher will have a rest so the responsibility is too quick for identifying threats of this type and the collection of activities which have it to minimize (Collision *et al.*, 2000). Paradoxically, the work on distance with the support of good IT solutions gives the possibility of a better estimation of trainee engagement in the learning process than during traditional training (the impression can be very wrong). If the teacher diagnosed already particular threats by means of the tools and methods described in the previous chapter, he/she has for their own disposition a set of tools for activating learning persons. In the discussed course reference to following methods was recommended:

- > Sending e-mails with the current information about the training, that which besides an informational layer, that had to hold up the interest of the trainee with the course;
- > Sending e-mail warnings in the situation in which was founded the

assumption that the trainee does not work systematically, or works too superficially, this type of e-mail informs a trainee, that the teacher is aware of the lack of progress in the learning process and that more work is needed;

- > Sending 'the last chance' e-mails to these trainees who did not complete some specific criterion for the training (e.g. did not know the content of the multimedia e-learning course in the established time frame) with information that they have the last possibility to complete the tasks (e.g. they received two additional weeks to finish their work);
- > A telephone conversation with the trainee – this form of direct contact will make the communication easy and will allow to get to know the manner about the approach of the student to the didactic process;
- > The activation by use of superiors – the most simple manner of the activation, if possible;
- > Improving the attraction of the discussion on the forum, in the case where this is the only way of opinion exchange, the attraction of these discussions will be essential motivation for the trainee;
- > Individual consultations – the possibility of asking questions will be attractive for these persons who do not have experiences, or are worried about public discussions on forums.

Each of the above described manners for learner activation should be started with exceptional caution. The lack of direct contact with the trainee makes it difficult to recognize his/her degree of engagement and motivation.

A recklessly formulized message received by electronic mail can in specific situations cause an adverse effect. The most quoted above methods of activation do not need to be realized by the teacher. If possible, he/she can work with help of the assistant. However, in such a situation, the teacher as a person responsible for learners always has to make a decision about criteria according to which activating tasks will be undertaken.

Support for distance learning

During the process of distance learning education what is very important is support to all actors of this process, i.e. trainees and teachers. This support refers to different problems, and that the leadership and the participation in the distance e-learning course is a new experience which is not always straight forward for the trainee and the teacher. Speaking about support, it is

important to take into account the fact that a good course depends also on the reliability of previously used IT solutions. This last aspect demands full technical support. Described below are all of the support elements offered during the pilot course.

The support for students during the distance e-learning course consisted of:

- > Delivering to the student full information about the course and term times, scores, etc. in syllabus form;
- > Delivering the instruction regarding the configuration of the web browser and class-book of the QuickStart type explaining how to use the IT system;
- > Indication of contact with the support team in case of technical problems (e-mail, telephone, dedicated forum);
- > Indication of rules regarding contact with the teacher in case of doubts of an essential nature, or connected to the organization of the course.

The support of the teacher embraced:

- > Training regarding operation of the IT platform and the methods used during the distance training in the accepted methodical model;
- > Support in the area of the methods and the use of tools;
- > Indication of the contact with the support team in case of technical problems (e-mail, telephone, dedicated forum).

In order for the distance learning course to be efficient it is essential that the used IT systems must work in a continuous and proper way. However, it is difficult to demand full reliability from the software and the equipment. Technical problems are a norm and not an exception and everyone has to prepare for these problems. To minimize all the threats coming from technical problems is the elaboration and implementation of the specific maintenance procedures. Consignment of the IT systems maintenance to specialists will guarantee that suitable operations will be realized unbeknown and the participation of persons responsible for didactics. This will permit the avoidance of disturbances, or even breaks in the didactic process because of technical problems. In extreme situations problems of this type can be reasons for leaving the course of remote instructions by discouraged students and teachers.

Activities of the technical support which should be implemented:

- > Systematical backups (minimum once a day) of the system and data;

during the course there are inadmissible situations in which after damage e.g. to the hard disk or lost parts of the work of students and information on their progress in the course;

- > Assurance of a suitable level of data security;
- > Readiness to undertake remedial activities in the event of a system failure e.g. the starting of the backup system;
- > Actual inspection of the systems efficiency and undertaking of remedial activities in a situation in which the given IT solution is not effective.

Rules regarding the creation of multimedia e-learning courses

During the organization of distance e-learning courses using the model where the didactic content constitutes the central point of the course, it is important how the decision concerning this content will be transferred to electronic form. We have to find answers to the following questions:

- > Whether the didactic content of the course should be prepared in some special manner depending on the needs of the electronic form;
- > How and by whom the transfer process of the content to the digital form should be realized.

Answering the first question, it is important to take into account the following possibilities:

- > Materials in electronic form are prepared through the simple digitalization of materials already being in the possession of their author (e.g. from teacher word files will be created pdf files, pictures possessed by the author will be scanned, etc.);
- > Materials in electronic form are prepared through the digitalization of materials possessed by the author supplemented by the new elements created on the needs of the digital form (e.g. elaborations of the teacher will be made attractive through adding photos, drawings, hypertext navigation, etc.);
- > Materials in electronic form are prepared on the basis of the didactic contents adapted specially for the needs of electronic elaboration.

In the last case the author creates (adapts) the contents in the way fully satisfied with the specificity of the chosen digital tool e.g. contents created for the needs of video-conferencing lectures will be other than contents built

for the needs of a multimedia e-learning course. In the case of building multimedia e-learning courses practically only the last solution should be considered. If in such a course there has to appear interactive elements (e.g. interactive demonstrations, quizzes, etc.) it is not possible that contents organized in a suitable manner can be in the possession of the author before the beginning of the creation of such a course.

Choosing the solution concerning how and by whom the didactic contents should be transferred to digital form, two possibilities have to be considered:

- > Creation of the content in electronic form will be realized by a specialist, the author, by means of dedicated tools;
- > Creation of the content in electronic form will be realized by the dedicated team working for the needs of the specialist.

The first solution seems to be attractive in consideration of the fact that at the present moment on the market there are many accessible labor-saving tools. In this approach the author is individually responsible for the form of the final product e.g. multimedia e-learning course. The tools dedicated to the production of multimedia courses have a set of predefined mechanisms that helps to build the numerous interactive elements (quizzes, demonstrations, placing and removal of photos, etc.), exporting the course in the SCORM format, etc. Such an approach is especially promoted by software manufacturers of this type and by numerous 'hot heads' that mastered such tools on more than the elementary level. However, this solution has numerous inconveniences:

- > Many specialists do not have the sufficient art and design talents that created courses which were aesthetical and ergonomic;
- > Many authors do not have the sufficient quantity of time to elaborate the content in this form;
- > Many authors simply do not want to deal with problems not connected to their basic competences.

The attempt of encouraging authors to use tools of this type in the situation in which we want to build professional multimedia and interactive courses reminds the attempt of encouraging the author of the book to individually provide illustrations, with the composition and the guarantee of good quality of print. Of course in many situations it is possible to create courses by means of such tools. However, it is important to remember, not to obtain

products on the 'copying-' level, because e-learning courses of poor quality will discourage trainees to the teaching themselves.

The second approach premises that the efficient production of multimedia e-learning courses should be based on the inclusion into these process professionals from different areas. In this model are distinguished:

- > Author of the course;
- > Instructional designer;
- > Executive teams.

The author of the course is a specialist who is responsible for:

- > The preparation of the essential content in such a form to meet the specificity of the multimedia and interactive e-learning course;
- > Acceptance of didactic resources and their form;
- > Inspections of the didactic correctness of the content in created multimedia elements.

Instructional designer, this is a specialist experienced in the designing and building of multimedia e-learning courses. He/she is responsible for:

- > The settlement of the structure of the e-learning course (the partition of the author's material on learning objects);
- > Proposing to the author the initial partition of the material conforming with accepted methodical foundations and (possibly) technical limitations;
- > Determining the degree of interactivity of the e-learning course;
- > Determining the technical parameters of the e-learning course taking into account the technical conditioning in which the course will be implemented.

The executive team is a team of professional graphic artists, computer scientists, multimedia specialists who are responsible for the construction of each element of the course designed by the author and instructional designer.

The advantages coming from the e-learning course construction by means of this method include:

- > Comparatively small work load for the essential specialist (author) with the production of the course, his/her role greatly involves only the elaboration of the content and to giving professional advice for the instructional designer during the project process;

- > Possibilities of building e-learning competence in the given organization by the instructional designer;
- > The possibility of the optimum usage of executive teams; in extreme cases during the construction of the following courses will be appointed completely different teams (technology development causes that competences acquired quickly become stale).

Creation of e-learning courses with such a method must be accompanied by a suitable budget. Unfortunately, the creation of good e-learning courses is expensive.

All courses created on the needs of 'Archaeological heritage in contemporary Europe' training were created conforming to the model of duties division between the author, instructional designer and executive teams.

Summary

The above described methodology of the distance didactic process and rules of e-learning solutions usage in the 'Archaeological heritage in contemporary Europe' distance learning course were elaborated with regards to the needs and habituations of persons working in the archaeological heritage field. The proposed technological solutions included the latest trends in distance education and were chosen in such a manner to best support teachers and students during the distance learning process. Proposed solutions were verified during the pilot courses conducted for target group representatives in five European countries taking into account different timeframes, organizational and cultural conditionings. Accepted methods and solutions will be able to be successfully used during distance e-learning courses regarding archaeological heritage also in other European countries as far as the course participants will be in a position to work with didactic materials in one of four languages in which these materials were created (English, German, Latvian, and Polish). In the course specific technical solutions were used (LMS/LCMS Edumatic system) and held only on the needs of these courses. However, the whole model was elaborated in such a manner that the course could be run not only on this platform, but also on many other LMS/LCMS systems. Very essential is also the fact that these systems have to realize requirements indicated as essential from the efficiency point of view. The solutions introduced in this paper were created on the needs of one particular course i.e. 'Archaeological heritage in contemporary Europe'. However, the elaborated

methodology has mostly a general character that after the creation of suitable didactic materials in the multimedia e-learning courses it will be possible to conduct distance courses also on other aspects of archaeology and heritage protection.

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