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SDI-EDU for regional and urban planning

SDI-EDU

Definition of training and testing plan

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Abstract

The document describes the planning for specialist training, development of materials and the process of training, by the way of seminars, distance learning and online consultations, thus providing the acquisition of sustainable knowledge.

The document establishes the basic requirements by implementation of which the efficient knowledge transfer to specialists is ensured.

The second part of the document contains the training implementation plan. Considering the fact that several independent organizations take part in the training process, it is necessary to point out each participant's functions and duties during each stage of the training process.



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Teaching for target groups

The training process for the target groups may be conducted as a seminar, or in form of distance learning in electronic learning environment. The choice of training form depends on the specifics of the training material and skills of teachers as well as opportunities for e-learning environment. At the initial stage of distance learning it is recommended to use both forms of learning in turn or mixed order as to ensure maximum comfort for trainees and teachers during the implementation of distance education.

Remote teaching for target groups

Remote training for the target groups - this is the process of transferring existing expertise in the form of educational material, in order to inform the distance learners and promote the acquisition of skills, according to learning requirements. This process takes place in an electronic teaching environment which is based on human, informative and technical



resources. Educational materials within the remote teaching consist of different educational elements:

- lecture texts and voice (vocal) accompaniment;
- animations and illustrations;
- demonstrations of task implementation;
- simulations and additional materials;
- testing.

Educational elements form educational material for specialists so that to conform to the following requirements as regards contents:

- the given information is appropriate and it can be immediately applied to perform the practical tasks;
- the given information is clear, it means that the interested and competent user can comprehend it;
- the given information is reliable and does not contain substantial errors;
- provided information is compatible to the existing methods and technologies that are sustainably used in the field of the given professional activity.

The successful use of the above enumerated elements creates pre-conditions for the complete, clear and evident transmission of educational material to listeners and enables to use the expected skills to perform the provided tasks. The course of the distance teaching takes place in electronic teaching environment, and a listener can start and look over this course only over the internet, on-line mode. On listener's computer the course can be opened through web-browser.

Electronic teaching environment

Electronic teaching environment is a set of software and hardware resources which provide the listener with a possibility through internet in a distance mode:

- to view the e-learning course;
- to listen voice accompaniment;
- provides virtual access to the electronic educational center, to work with virtual laboratories and start of electronic courses.

The access to the electronic teaching environment is possible through the electronic educational center. During distance teaching, the electronic educational center is a single point of access to the educational resources. The electronic educational center comprises all necessary services and functions for convenient and effective teaching.



Login to e-learning environment is carried out remotely over the internet. In order to access the e-learning center the listener has to register in compliance with the requirements of the center.

At the use of distance learning course through an electronic educational center the system automatically checks up the system surroundings of listener's computer and checks the compliance with minimum technical requirements. If the system surroundings do not comply with the technical requirements, the system suggests a listener the actions to be taken to correct the identified deficiencies.

Requirements for listeners of electronic course

Distance learning course assumes the existence of personal **interest and relevant expertise** of the listener and **does not set the goal** to discuss or convince the listener.

Requirements for teacher of electronic course

The feature of the e-learning is missing the verbal contact with a teacher and the listener perceives material, teacher and informative environment as a single unit. The overall success of transferring information to the listener depends on teacher's ability to use effectively the electronic teaching environment and maximally understand the theme of the course.

At the same time the teacher must understand the features of listeners' testing within the distance teaching. It is crucially important for the teacher to understand the test tasks for the particular educational material.

This requirement is dictated by the necessity for the distance learning course to serve so that to provide possibility of reliable analysis of test results, with the purpose of possible suggestions for improvement and error correction. Besides, the testing results are the indicators of teacher's work.

Teaching activity in an electronic teaching environment is public and, taking into account the possibility of recording the lecture and its subsequent analysis, it is a difficult and responsible process. At the same time it is necessary to understand that the listeners are specialists in a certain area, and they are able to perceive the nuances of the offered solutions and information. Therefore, the motivation and feelings of the teacher are important.

Deeper motivation of the teacher:

- the set of knowledge, abilities and skills; and interest to interpret them;
- anxiety to be misunderstood;



- excitement to convey knowledge, skills and abilities to the public;
- contentment or disappointment due to positive or negative feedback of audience.

An important factor, making the distance teaching maximally effective, is teacher's 'presence' during the teaching process. The teacher accompanies listeners from the beginning till the completion of teaching. A teacher passes the practical tasks and checks the implementation, answers questions on the studied topic.

The specific service "Communication with teacher" must be foreseen within the electronic educational center, which provides the possibility to communicate with the teacher individually. All correspondence should be structured and kept, so that one could always return to any questions, continue to discuss the issue or start a new discussion.

The teacher can independently choose the type of tutorship for each student, depending on educational material, aims of teaching and other circumstances. The main types of tutorship are the following:

- general care about listener's requirements; guardianship;
- support and advice at listener's request; tutorship based on partnership;
- Support and advising initiated by tutor depending on behavior and success of listeners;

In order to provide the assimilation of skills based on acquired knowledge, the teacher helps listener to form an active position, using possibilities of electronic teaching environment, by managing listener's individual level of motivation:

- provide motivation for achievement (gradually increasing the complication of tasks)
- enable to take responsibility
- coordination of emotional sphere (disclosure of personal and public motives and their harmonization)

Educational materials

The substantial part of the e-learning course is the information basis, which is set in the text and audio-video series. It is envisaged that a competent and interested listener at a reasonable time is able to acquire skills and knowledge according to the requirements for successful completion of the electronic course. The content of the electronic course for specialists (or prospective specialists) has to be related to events and facts (100%) which are:

- past experience, but not the experience of the listener (25% is recommended)
- present activities (40% recommended)
- preparation for future activities (35% recommended)



To ensure the perceptible teaching material it needs to be structured into sections, topics, units.

The didactic task of the educational course - to provide a listener with certain volume of every element of educational material.

It is possible to single out three components of educational material:

- **Methodical recommendations.**

Methodical recommendations for the e-learning course:

- How to study educational material,
- how to control the acquisition of knowledge,
- when to perform practical assignments,
- when to consider the teaching as finished,
- how to prepare the listeners to control testing,
- what chapters and practical assignments need to be paid special attention

Methodical recommendations comprise the contents of course chapters, recommended time for each chapter, requirements for passing the test and inter-testings.

- **Supporting lecture notes**

A supporting lecture notes is a brief variant of educational materials of the electronic version of the course and can be used for taking notes, writing down commentaries etc.

The basic scheme also enables the learner to quickly restore the knowledge.

- **Descriptions of practical exercises**

Descriptions of practical exercises contain practical assignments and recommendations how to carry them out.

It is necessary to provide control of versions and control of copies of educational materials during the development and maintenance of educational materials. These requirements are necessary in case any changes may take place in the processes of subject part, due to acquisition of new useful experience, and/or introduction of new technologies in the sphere of remote teaching.

Notification via e-mail and subscription to available upgrades, promotes efficiency and provides a reliable feedback of the electronic course user.

Educational material is recommended to develop:

1. with the use of flexible approach of development of "AGILE", which is based on cyclic principle of development of <http://ru.wikipedia.org/wiki/Agile>
2. with the use of methodology of GFEN, especially in the final stage;



3. in accordance with the requirements of standards of co-operation between learning management systems, educational content and educational portals, for example: Basic Learning Tools Interoperability Standard (LTI).

Webinar

Webinar - is a whole lecture in an e-learning environment in which students remotely participate at live transmitting of training material, with the opportunity to immediately ask questions and comment on training course in text or audio mode.

An educational process must provide mastering of all elements of educational material to the level which is determined at the development stage of the course. An educational process is producing of information -> mastering of information to the set level -> verification (presentation of reliable artifacts to learner) -> feed-back.

We recommend using a methodology GFEN, which allows each student not to assimilate knowledge, but build it. The teaching is more like a workshop than a lesson.

Motivation by means of electronic reports is highly effective both during preparation process and after its realization.

Testing

The characteristics of electronic teaching environment determine the co-operation among learners and a teacher.

In the distance teaching the information reception and transfer substantially differ from the traditional forms of teaching. The testing function plays the major role in the achievement of teaching goals. The testing provides control of educational material performing with the set exactness on a next model: new information -> control of performing -> success or establishment of error -> continuation of studying new material or correction of error (to overcome it), then – studying of new material.

Tests are divided into psychological and pedagogical:

- Psychological are tests on determination of the hidden (latent) parameters of a person, for example, of his/her specific capabilities.



- Pedagogical are tests on determination of educational achievements of a person, i.e. measuring the results of educational process.

It is quite common to divide test assignments into open and closed assignments. In open assignments the learner's answer is entered in an arbitrary variant. In the closed assignment for the input of answer a choice is used from a set of some logical elements (phrases, formulas, numerical values etc).

The closed assignments have the following basic forms:

- choice from a few options;
- establishment of accordance;
- establishment of correct sequence;
- establishment of the right element;
- construction out of few elements etc.

The inter-testing (or self-test) is needed to verify the mastering of the obtained knowledge. The inter-testing prepares a listener to pass the control testing.

Every distance learning course is supposed to contain a control testing. The results of the control testing serves as a basis for making decisions regarding further teaching process.

The amount of questions, necessary level of right answers, the amount of attempts to pass the testing is determined individually for each course. Requirements to pass the control testing for each course are determined in the program of teaching.

List of basic types of control:

- Preliminary
- Current
- Thematic
- Result
- Self-control
- Self-appraisal

Evaluation

During testing the learner receives an assessment or evaluation, which is an important indicator of the attainment of a certain level of knowledge and skills.

It is essential that the entire mechanism for determining the degree of compliance, level of knowledge and skills of the student, identified in the training course characteristics, is clear



and precise. The learner's personal opinion as regards his/her own professional skills and practical opportunities for solving specific problems is also important.

In order to achieve the necessary level of knowledge and skills, during the preparation of the testing it is important to develop testing questions clearly, correctly and exclusively within the teaching material. The definition errors, questions having several associative meanings and questions unanswerable due to technical reasons have to be excluded.

The electronic course comprises the self-control function – it provides the listener the possibility to do an assignment, show the result, and, if needed, to correct possible mistakes. During the self-control the listener is entitled to make errors and correct them.

The function of the self-control is to equip the listener with the possibility to define and realize the amount and quality of acquired knowledge and skills, as well as to realize the degree of readiness to master the new material.

Management by knowledge

The most important part of knowledge management is to maintain the acquired level of knowledge.

To ensure representation of all the released versions and features of the distance learning course, it is important to use the control system of versions and monitor the changes in the multiuser development environment. Environment of knowledge management and accumulation can be realized on the basis of MediaWiki. Further the system of knowledge accumulation and management is called for short – WIKI.

When designing a version control system it is necessary to take into account the possibility of translating materials into other languages, so as to control the translated versions throughout the development, implementation, maintenance and continuous improvement of the course.

Development of distance learning course

Modern programmatic facilities for development of distance learning courses are usually quite easy-to-operate and have an interface, similar with Power Point.

The success of the course largely depends on the development of training material. However, the course's compliance to the up-to date requirements largely depends on learning environment.



In the process of developing distance learning courses it is possible to use several options of function distribution among specialists:

- 1) Distance learning training specialist prepare the complete description of the course in the format of Word or Power Point and submit it to specialists who transform the course in Bizbiz tool;
- 2) Distance learning training specialist independently prepare the course in Bizbiz tool

It is necessary to define at the developing stage of the course, how often the modernisation of the course will be needed and what expenses can be required for this purpose. Modernisation of the courses can be conducted quite often; the main can be the following:

- standards mentioned in the course have changed;
- computer programs mentioned in the course have changed;
- teaching methodology has altered;
- the listeners have established an error or deficiency within a course;

Developer of distance learning course

The developer of the course usually is a group of specialists associated in order to develop, introduce, maintain and improve the distance learning course. The duties and responsibilities within the group are distributed taking into consideration the creative potential and professional experience of each participant.

The development of distance learning course is time and effort consuming process, and great number of specialists is usually involved from the different departments of one organization or even from different organizations. In order to develop a successful course, it is mandatory to divide functions and responsibilities clearly and exactly.

If a trainer or specialist does not have experience of developing electronic courses, it is recommended preliminary to send him/her to appropriate training, as development of electronic courses has certain specificity in comparison to fulltime teaching.

The course developers undertake the planning and development of the course in compliance with the functional requirements of the knowledge accumulation and management system (WIKI).

Training material is developed in such a way as to ensure control of changes and additions throughout the development, implementation and use of electronic distance learning course.

Introduction of distance learning course

Introduction of course is the first complete cycle in the long-term process of development of distance learning course, and its task is :

- approbate of electronic teaching environment for transmission of educational materials ;
- approbate testing resources and determine too easy or too difficult questions;
- approbate process of course contents' improvement and correction of errors within educational material and test tasks;
- approbate test systems for versions and copies;
- approbate the feedback process with listeners

The main task of introduction is to get actual experience of exploitation of educational course. The course introduction provides an experimental start and revision of educational materials.

A process of experimental start is:

- Set of pilot group of students on the module 1
- Start of pilot group
- Working off educational materials of the module 1
- Working on recommendations to improve the material.

A process of revision of educational materials is:

- Revise materials of the educational module 1
- Edit materials from modules 2,3,4....
- Coordinate parts in the integral modules and within educational course
- Prepare suggestions on educational materials' improvement

In the process of experimental start and revision of educational materials it is very important to document the basic stages of teaching process and process of educational materials' revision. This information will be crucial in planning the further development of distance education courses.

It is important to have exact data about time necessary for the correction of errors and making alteration in educational material, from a moment finding out the necessity of correction-revision, and to the moment of notification of listener about the implemented changes and clarifications on all supported languages. This information allows determine the time necessary for alterations or clarifications and cost of such works, taking into account accessible resources for all involved specialists.

Effective team allows maintain a distance learning course in its developed state, and provides a high degree of success (and listeners' contentment), due to its modern and professionally useful educational material, reliable test results and convenient form of feedback with teachers and developers.

Reporting on the results of the implementation

It is assumed that the process of implementation will be based on the cyclic model of development, which implies a decision, action, measuring of results and new decision as regards the improved action. Measuring of results can be realized by different methods, but one of the most important is to determine the degree of contentment of a listener.

The table of contents of tests is determined by the developer of educational materials and educational course on the whole. This requirement is conditioned by efficiency of maximal approximation of educational material and testing process. Thus educational material and testing system on this particular educational material is realized by the same group of specialists. This form appears the most effective in order to provide the developers' team with information for the analysis of their own work and drafting a plan for improvements, corrections and additions.

It is proposed for each test in addition to issues of teaching material, to use a standard set of questions with the code "AP", to be kept the same when translated into other languages.

The listed questions:

Interface and functioning

The interface of course seemed to you (AP21) :

- quite clear (AP21A);
- difficult (AP21B);
- very difficult (AP21C);

Did you face any errors within a course (AP22) :

- grammatical, punctuation, syntactic (AP22A);
- (AP22B) in content;
- technical (AP22C).

Evaluate the quality of design (pictures, videos, texts) of course materials (AP23) :

- poor (AP23A);
- moderate (AP23B);
- good (AP23C).

Evaluate the quality of texts (pictures, videos, texts) course (AP24) :



- poor (AP24A);
- moderate (AP24B);
- good (AP24C).

Table of contents and teaching

Materials of course are oriented to listener's level (AP31) :

- beginner's (AP31A);
- intermediate (AP31B);
- advanced (AP31C).

Control questions and exercises seemed to you (AP32) :

- too simple (AP32A);
- too difficult (AP32B);
- moderately difficult (AP32C).

Was it enough questions and exercises for the estimation of knowledge on the article of course (AP33) :

- yes (AP33A);
- no (AP33B).
-

Knowledge acquired during the course can be applied in practice within a company (AP34) :

- regularly (AP34A),
- sometimes (AP34B),
- never (AP34C)

Any new information during the course (AP35) :

- yes (AP35A);
- no (AP35B).

Learning experience

Was the course interesting from the beginning to the end (AP51) :

- interesting (AP51A);
- neutral (AP51B);
- tiresome (AP51C).



All statistics and information on the process of different sections of the course and results of testing is being kept throughout the project to be transmitted electronically for analysis and reports.

Administration of the distance teaching

Administration of educational portal

The administration of the educational portal refers to publication of courses, reporting, customization of various sections of educational school portal, etc. At the best the administration is executed by the specialists of teaching department, addressing the department of IT and developer of educational portal only in case of some technical issues. In most cases the administration does not require any special technical knowledge.

System of knowledge accumulation and management - WIKI

System of knowledge accumulation and management must possess sufficient resources and priorities during the activity of all organization.

This requirement is conditioned by that by a decision factor at the use of the newest technologies and experience, determined by quality and comfort of intercommunications between the centers of knowledge and centers of application of these knowledge, and also by efficiency of feed-back

Certificate about completion of teaching

After successful completion of the course the listener is presented a course completion Certificate. The basic condition to receive the Certificate is to pass successfully the control testing. The Certificate can be received by the listener in person at the educational center, or it can be mailed upon request.

Teaching pattern

A teaching pattern is a set of services, methodical materials and possibilities the listener is offered during distance learning course.

Access to teaching

Access to educational materials, virtual class, as well as socializing with a teacher is carried out remotely via internet. To participate in the distance learning course a listener needs to have an access to computer and Internet.



Contacts

A listener is encouraged to address the educational centre by phone or email in order to ask help and technical support.

Conclusion

By distributing functions among the involved specialists at the development, implementation and maintenance of the distance learning course, it is possible to create an effective system of distance learning on the basis of resources available within the organization.

The success of the development, implementation and improvement of distance education is determined by the correct choice of functions performed by each participant of the project. Understanding within the team, which is focused on the appropriateness, clarity and accuracy of training material they develop and support distance learning course, determines how the course will be primarily responsible for the practical question, "How to do it" and then "Why is it necessary to do so" .

It is necessary to understand that by producing the first version of a new course of the distance learning, the course is in its beginning and will be in constant demand of permanent attention from the side of developers.

Modern distance learning course at any one time should contain only accurate and precise information, as well as collect and submit information to developers about the implementation of the course.

Therefore, the developers' team with a focus on long-term effective cooperation determines the long-term use of the distance learning course.

Training and testing plan

Definition of training and testing plan

In correspondence with the project task the association „Learning projects“ prepares the definition of training and testing plan

Teaching tool is being developed

In correspondence with the project task IMCS prepares teaching tool (Bizbiz tool).



Training content creation

In correspondence with the project task CAGI (collaboration with HSRS and UWB) produces teaching material.

Translation and adaption of training content:

Training material is being translated and adapted by each partner

Preparation of trainers

Each project partner selects trainer or trainers

Workshop for trainers /Pilsen, Czech Republic/:

Two or three days workshop for trainers (for all partners) is organized at the UWB premises in Pilsen, in order to comprehend the training content and Internet educational platform. Specialists from CAGI, HSRS, UWB and IMCS participate.

Training of the pilot group (Latvia) :

The association „Learning Projects” set the group (3-5 people) of specialists and tests the teaching material and learning tool. Necessary amendments are summarized

Training of the pilot group (Partners) :

Each partner assembles a small group (3 – 5 people) of specialists and tests teaching material and learning tool. Necessary amendments are summarized

Training of the target groups

Specialists’ training at each partner

The project further operational plan:

HSRS prepares the possible further plan of Project exploitation

Publishing of SDI-EDU training content

Material translation and publishing at WIKI/Portal page

WIKI / Portal :

The site WIKI / Portal is used to improve the teaching material and to publish the translated material

Communication with target groups

The sites WIKI/Portal serves as a communication platform for listeners of the target groups and teachers/material developers



Assessment of training

The association „Learning projects“ summarizes the results of the teaching and publishes it at WIKI/Portal sites



Training and testing plan (chart)

| Title | HSRS+UWB | AP | CAGI | Partners* | IMCS | 01.07.2010 | 31.07.2010 | 31.08.2010 | 30.09.2010 | 31.10.2010 | 30.11.2010 | 31.12.2010 | 31.01.2011 | 28.02.2011 | 31.03.2011 | 30.04.2011 | 31.05.2011 | 30.06.2011 | 31.07.2011 | 31.08.2011 | 30.09.2011 | |
|--|----------|----|------|-----------|------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--|
| Definition of training and testing plan | | █ | | | | █ | █ | | | | | | | | | | | | | | | |
| Teaching tool is the developed | | | | | █ | █ | █ | | | | | | | | | | | | | | | |
| Training content creation | █ | | █ | | █ | █ | █ | | | | | | | | | | | | | | | |
| Translation and adaption of training content | | █ | | █ | | | | | █ | | | | | | | | | | | | | |
| Preparation of trainers | | █ | | █ | | | | | █ | | | | | | | | | | | | | |
| Workshop for trainers /Pilsen, Czech Republic / | █ | █ | █ | █ | █ | | | | | █ | | | | | | | | | | | | |
| Training of the pilot group (Latvia) | | █ | | | | | | | | █ | | | | | | | | | | | | |
| Training of the pilot groups (Partners) | | | | █ | | | | | | | █ | | | | | | | | | | | |
| Training of the target groups (All partners) | █ | █ | █ | █ | █ | | | | | | | | █ | | | | | | | | | |
| The project further operational plan | █ | | | | | | | | | | | | | █ | | | | | | | | |
| Publishing of SDI-EDU training content | █ | | █ | | | | | | | | | | | | █ | | | | | | | |
| WIKI / Portal | █ | █ | █ | █ | | | | | | █ | | | | | | █ | | | | | | |
| Communication with target groups | █ | █ | █ | █ | | | | | | | | | | █ | | █ | | | | | | |
| Assessment of training | | █ | | | | | | | | | | | | | | | | | █ | | | |
| *Partners - who will be training the target groups | | | | | | | | | | | | | | | | | | | | | | |