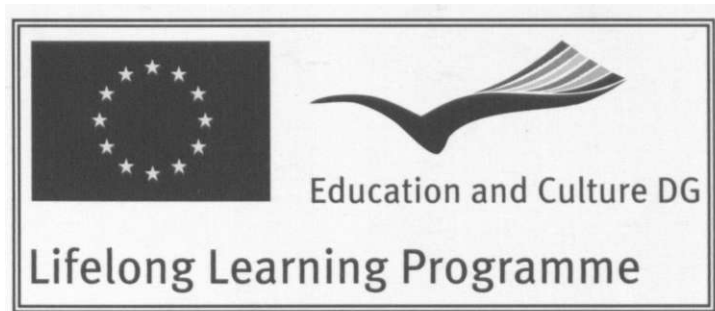


LIFELONG LEARNING PROGRAMME

142399-LLP-1 -2008-1 -BG-ERASMUS-ENW

European Thematic Network

**TEACHING, RESEARCH AND INNOVATION
IN COMPUTING EDUCATION**



P R O C E E D I N G S

of the

INTERNATIONAL CONFERENCE

on

E-LEARNING AND THE KNOWLEDGE SOCIETY

e-Learning'11

25-26 August 2011 Academy of Economic Studies Bucharest, Romania

Converting a Regular Learning Course into Distance Course

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Abstract: A methodology for converting a regular course into a distance course is presented. The milestones of a technique developed to meet the needs of a new type of learning, which beneficially exploits the domain of the distance-learning courses, are identified. Some of the distance education theories, distance courses definitions and different learning techniques, are presented. The conversion process, the technique issues, requirements and conversion steps are discussed. The conversion of the regular course "Web technology" into distance course is presented.

Key words: Distance course, Distance education theories, Distance courses definitions, Conversion regular into distance course

1. INTRODUCTION

The beginnings of distance education date back over one hundred years ago to the age of correspondence education [3] when Frederick Turner ran the correspondence history program at the University of Wisconsin. Recent research clearly shows that students who learn at a distance do not learn any better or any worse than the traditional students. In the last few years distance learning has become a major topic in education. Distance education is a revolutionary leap that brings out the needs and requirements of a new generation of learners that would not be reconciled with education operating at the level of delivery of course material. They would rather look for the creation and use of new kinds of learning environments, which reflects in a better way the complexity of the learning process and learner's role in education - that of an explorer and creator rather than that of a consumer. There is a new vision that is developing during the past fifteen-twenty years and that is strongly influenced by the social and cognitive sciences. The educational system is now focused on learning rather than on teaching.

According to [2], there are seven factors defining the distant learner satisfaction: (1) instructor/instruction, (2) technology, (3) course management, (4) at site personal, (5) promptness of material delivery, (6) support services, and (7) out-of-campus communication with the instructor. Learning in a new environment contributes to the building up of a number of skills, which are to become inherent in educational practices of the new generation of learners. These include: (1) quickly orient one self and locate and gather the information that is needed; (2) communicate; (3) learn how to do project work; and (4) apply knowledge in a problem-solving situation. Integration of theory into practice has always offered a challenge, particularly, when there is no visual contact between instructor and learner. The selection of skills-oriented and skills-developing type of exercises is of paramount significance because they contribute to the building of the learner's confidence, and is a real incentive for further practice. Varieties of connections to other web sites provide opportunities for the learner to convert information into knowledge and make it meaningful by applying it to a particular specific human activity.

Prior to Web 2.0, there was usually a clear distinction between an audience and a recognized author [18]. The Michael Wesch YouTube video (2008), "A Vision of Students Today," shows the viewpoint of learners within the traditional classroom and explores how the structured environment does not connect with their desire for informal learning. Web 2.0 and social software tools have tremendous potential to remove the barriers of distance education. The social dimension of Web 2.0 tools has already begun to change the traditional paradigm of distance education. The challenges that

social software addresses (meeting, building community, providing mentoring and personal learning assistance, working collaboratively on projects or problems, reducing communication errors, and supporting complex group functions) have application to educational use [1].

In the paper, we identify the milestones of a technique that is developed to meet the needs of a new type of learning that beneficially exploits the domain of distance-learning courses. The process of converting a regular learning class into a distance class is discussed. The structure, design issues, and examples from converting the regular course "Web technology" into a distance course are presented. The layout of the paper is as follows. In Section 2, we review distance education theories. In Section 3, the conversion process is analyzed. In Section 4, the conversion of the regular course "Web technology" into a distance course is presented, and finally, in Section 5, our conclusions are presented.

2. DISTANCE EDUCATION THEORIES

Distance education or distance learning is a field of education that focuses on teaching methods and technology with the aim of delivering teaching, often on an individual basis, to students who are not physically present in a traditional educational setting such as a classroom. It has been described as a process to create and provide access to learning when the source of information and the learners are separated by time and distance, or both. Doering [7] formulated seven interdependent principles and presented the adventure learning. The networked teacher according to [4] is presented as an individual's connectivity through participation in social media activities (e.g., blogging, wikis, social networking).

The changing and diverse environment in which distance education is practiced has inhibited the development of theories upon which to base practice and research. A variety of theories have been proposed to describe traditional distance education. They include theories that emphasize independence and autonomy of the learner, industrialization of teaching, and interaction and communication [14]. Various forms of distance education have existed since the 1840. In 1988 Holmberg [9] reiterated the need of distance education theories. Keegan [10] classified the distance education theories into three groups: (a) theories of independence and autonomy; (b) theories of industrialization of teaching and (c) theories of interaction and communication.

- **Theories of independence and autonomy.** The essence of distance education is the independence of the student. It takes in consideration the amount of learner autonomy and the distance between teacher and learner. The American theory of independence is based on Wedemeyer, a professor from the University of Wisconsin. He points four common elements of every teaching-learning situation: a teacher, a learner or learners, a communications system or mode, and something to be taught or learned. The European theory of Independent Study is formulated in the 1970s by Moore [11]. For him, distance education is composed of two elements: the provision for two-way communication (dialog) and the extent to which a program is responsive to the needs of the individual learner (structure);
- **Theories of industrialization of teaching.** The distance education is treated as an industrialized form of teaching and learning. Mechanization, assembly line, mass production, and standardization are some of the characteristics it possesses. The theories of industrialization of teaching begin with the Peters

work [12]. He proposed that distance education could be analyzed by comparison with the industrial production of goods;

- **Theories of interaction and communication.** Holmberg states: "Distance teaching will support student motivation, promote learning pleasure, and make the study relevant to the individual learner."

In 1995, Holmberg [8] significantly broadened existing distance education theories. According to Holmberg, distance education is characterized by the following statements:

- All learning concerned with the acquisition of cognitive knowledge and cognitive skills, as well as affective learning and some psychomotor learning, is effectively provided for by distance education;
- Distance education is based on learning as an individual activity. Learning is guided and supported by noncontiguous means;
- Distance education is open to behaviorist, cognitive, constructivist, and other modes of learning;
- Personal relations, study pleasure, and empathy between students and those supporting them (tutors, counselors) are central to learning in distance education. Feelings of empathy and belonging promote students' motivation to learn, influencing learning favorably;
- While it is an effective mode of training, distance education runs the risk of leading to mere fact learning and reproduction of accepted "truths". However, it can be organized and carried out in such a way that students are encouraged to search, criticize, and identify positions of their own.

3. THE CONVERSION PROCESS

Only collaborative technologies now allow fully participatory worldwide learning communities. For the conversion process we use the ADDIE technology. The ADDIE (Analysis, Design, Development, Implement, and Evaluate) model [17] is the generic process traditionally used by instructional designers and training developers. The five phases: Analysis, Design, Development, Implementation, and Evaluation represent a dynamic and flexible guideline for building effective training and performance support tools. It is used for us as a basic of the conversion process.

- In the **analysis phase**, the instructional problem is clarified, the instructional goals and objectives are established and the learning environment and learner's existing knowledge and skills are identified;
- The **design phase** deals with learning objectives, assessment instruments, exercises, content, subject matter analysis, and lesson planning and media selection. The design phase should be systematic and specific. Systematic means a logical, orderly method of identifying, developing and evaluating a set of planned strategies targeted for attaining the project's goals. Specific means each element of the instructional design plan needs to be executed with attention to details;
- The **development phase** is where instructional designers and developers create and assemble the content assets that were blueprinted in the design phase. In this phase, storyboards and graphics are designed. Testers perform debugging procedures. The project is reviewed and revised according to the feedback that is received;
- During the **implementation phase**, a procedure for training the facilitators and the learners is developed. The facilitators' training should cover the course curriculum, learning outcomes, method of delivery, and testing procedures.

Preparation of the learners includes training them on new tools and student registration. Evaluation of the design is also part of this phase;

- The **evaluation phase** consists of two parts: formative and summative. Formative evaluation is present in each stage of the ADDIE process. Summative evaluation consists of tests that are designed for domain specific criterion-related referenced items and provides opportunities for feedback from the users.

The distance course could include different kind of information such as: course information, staff information; streaming video sessions; course documents; assignments; and tools such as: announcements, blogs, calendar, collaboration, contacts, course portfolios, discussion board, glossary, groups, journals, messages, wikis, etc. The course design takes into account the specific character of the medium with a number of key design issues:

- The balance between video and management system based materials and links and references to external sources and locally available materials;
- The extent to which communication and information is integrated in the course;

Some further technical issues taken into account by creating the course, reflecting the specific medium include:

- Proper choice of the background color and the lettering color - psychologically recommended color combinations have to be used for the total design of the site so that the learner can make the most of the supplied information. Some colors are not used because they are not good for video recording;
- Proper choice of letter size. We suggest 24 or 36 points; of letter fond - sans serif font; number of words in line - six; number of lines per slide - six; letter case - combination of both uppercase and lower case letters, "white space" - plenty of;
- Use of graphics and charts in the text to visualize the content. Perception and apprehension of the learning content is enhanced in the cases where graphics and charts are used;
- Uniform graphic and color design of the sessions is observed throughout the course. Different size or color type, different background color or different layout of the information is not allowed;
- Consistency in the content structure. Each session is compiled from the same parts;
- The choice of approved assignment indicates learners' level of achievement on the course and the standard attained. It is intended to verify how well learners are able to meet the session objectives on the one hand, and the degree of transfer of knowledge they can make, on the other.

Throughout the distance education course, learners should be assessed formally. The formal assessment is a continuous assessment of a learner's contribution. The choice of approved assignment indicates learners' level of achievement on the course and the standards that are attained. It is intended to verify how well learners are able to meet the session objectives on the one hand, and the degree of transfer of knowledge they can make, on the other. Throughout the distance education course, learners should be assessed formally. The formal assessment is a continuous assessment of a learner's contribution. Some of the course requirements include:

- Clearly supportive to the learning objectives;
- One that the learners find attractive to learn;
- Available to the learners - where and when they need it;

- Convenient for the learners to use and to control the timing and their own place of learning;
- One for which the learners can quickly acquire the skills to use effectively;
- One that the instructor have the skills and know how to use effectively;
- One that relates clearly to other media;
- One that both instructors and learners can afford to use;
- During the conversion steps the following steps are taken:
- Assess needs to identify goals;
- Analyze learners and contexts (student-teacher, student-content, and student-student), use different learning styles (http://www.thomasarmstrong.com/multiple_intelligences.htm)
- Conduct instructional analysis;
- Write performance objectives;
- Develop assessment instruments;
- Develop instructional strategy;
- Develop and select instructional materials;
- Design and conduct formative evaluation;
- Revise instruction;
- Design and conduct summative evaluation.

4. CONVERSION OF THE REGULAR COURSE "WEB TECHNOLOGY" INTO A DISTANCE COURSE

"Web technology" is a regular course that was converted into a distances course, which we designed and implement in the frame of the "Master of Science in Information Technology program" in the Kettering University [15, 16]. The course is based on video tapes, textbooks, "Blackboard" system based information and e-mail communications. The video tapes contain the lectures. The course is accompanied by a list of books, which are required to be used by the learner to prepare for each session as well as a list of recommended books and papers, which discuss various issues and elaborate on the topics. The main textbook is [6]. As additional readings, the following books are also suggested to the students [13, 5]. The course is delivered for USA and India students in the moment.

An electronic course-organizer site is more than a source of information. It becomes a learning environment for the course itself. The course materials for this course on "Blackboard" system include several sections. Some of the topics are:

Course information

In this section the syllabus is given. An integral part is the course project. A project is described at the beginning of the course. It contains the following components:

- Students choose a problem in industrial settings that can be solved using a Web 2.0 shopping car;
- Students then form groups;
- Next, students examine contemporary products and tools for solving the problem and analyze which approaches are more successful and why;
- The next step is to suggest a solution and implement a product;
- The product that was developed is implemented in industrial settings;
- The last step is to present a plan for marketing the product.

Students become aware of the transition from Web 1.0 to Web 2.0 and the benefits of built-in browser objects, which enabled Ajax to give significant momentum to

Web 2.0. Without a breakthrough technology, superior Web 3.0 tools will be more difficult to develop than their counterparts for Web 2.0. Students learn, from the lifecycle of developing Web products, how to create new tools that offer society greater sophistication, complexity, and functionality.

Streaming video sessions

This section includes the video modules from every week. The modules are usually around 90 minutes long.

Course documents

This section includes the instructor MS power point slides. Usually every session is divided into:

- Introduction to the session;
- Aims and Objectives;
- Historical facts;
- Definitions of the important terms used in the session;
- Session reading list;
- Program examples;
- Link to a list with connections to Web sites with related to the session information;
- Session quiz;
- Wrap-up part.

Assignments

This section includes:

- Weekly quizzes;
- Program assignments;
- Midterm exams that contain multiple-choice questions and programming assignments;
- Final exam that contains programming assignment and multiple choice questions;
- Self-testing questions and answers.

Tools

In this section the students can find: Address Book, Calendar, Digital Drop Box, Edit Your Homepage, Electric Blackboard, Glossary, Personal Information, Student Manual, Tasks, View Grades, and many more. The drop box is very useful for sending program assignments.

5. CONCLUSIONS

As is the case in writing a textbook, the development of a good distance education course is a long-term process of trials and errors. I have more communications with my distance students than with my regular students. I receive e-mails at least once a week from all of them. I met one of my distance students in person. He was so excited about the course that he wanted his son to be a regular student in my university.

ACKNOWLEDGMENTS

This work was supported in part by Open Access Infrastructure for Research in Europe (OpenAIRE) EU project, and the Bulgarian National Science Fund under the Project D002 308 "Automated Metadata Generating for e-Documents Specifications and Standards".

REFERENCES

- [1] Anderson, T.: Distance learning: social software's killer app? 17th Biennial Conference of the Open and Distance Learning Association of Australia, Adelaide, SA, 9-11 November (2005)
- [2] Biner P., Dean R., Mellinger A.: Factors understanding distance learner satisfaction with televised college-level course. *The American journal of Distance education*, 8(1), pp. 60-71 (1994)
- [3] Cleveland-Innes, M.F.; Garrison, D.R.: *An Introduction to Distance Education: Understanding Teaching and Learning in a New Era*, Taylor & Francis (2010)
- [4] Couros, A.: Examining open (source) communities as networks of innovation: Implications for the adoption of open thinking by teachers. Doctoral dissertation. University of Regina, Regina, SK, Canada (2006)
- [5] Davis M., Phillips J.: *Learning PHP & MySQL. Step-by-Step Guide to Creating Database-Driven Web Sites*, O'Reilly (2007)
- [6] Deitel Harvey & Paul, *Internet & World Wide Web: How to Program*, Prentice Hall (2008) '
- [7] Doering, A.: Adventure learning: Transformative hybrid online education. *Distance Education* 27(2), pp. 197-215 (2006)
- [8] Holmberg B.: The evolution of the character and practice of distance education. *Open Learning* 10 (2), pp. 47-53 (1995)
- [9] Holmberg, B.: Guided didactic conversations in distance education. In Sewart D., Keegan D., Holmberg B. (eds.) *Distance education: International perspectives*, New York: Routledge, pp. 114-122. (1988)
- [10] Keegan, D.: *The foundations of distance education*. London: Croom Helm (1986)
- [11] Moore, M. G.: Autonomy and interdependence. *The American Journal of Distance Education* 8 (2): 15 (1994)
- [12] Peters, O.: Distance teaching and industrial production: A comparative interpretation in outline. In Sewart D., Keegan D., Holmberg B. (eds.) *Distance education: International perspectives*, New York: Routledge (1988)
- [13] Schwartz R., Phoenix T., Foy B.: *Learning Perl*, O'Reilly (2009)
- [14] Simonson M., Schlosser C., Hanson D.,: *Theory and Distance Education: A New Discussion*, *The American Journal of Distance Education* Vol. 13 No.1 (1999)
- [15] Stanchev P.: *Converting a Regular Learning Course into Distance Course*, e- Learning conference, 25-26 august, Bucharest, Romania (2011)
- [16] Stanchev P.: *The Web Technology Distance course*, Conference on Information Technology in Education, September 18, Elizabethtown, PA (2004)
- [17] Strickland, A.W.: "ADDIE". Idaho State University College of Education, Science, Math & Technology Education (2006)
- [18] Veletsianos G. (eds.): *Emerging Technologies in Distance Education*, AU Press (2010)

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