

WWW-based distance education course “Management Support Systems”

Peter L. Stanchev, Boyan Dimitrov

Kettering University

1700 West Third Avenue, Flint, Michigan, 48504 USA

e-mail: pstanche, bdimitro@kettering.edu

ABSTRACT

The paper introduces a technique for designing WWW-based distance education courses. It also comments on the provisional evaluation, given by students from the Faculty of Mathematics and Informatics, Sofia University, of a developed WWW-based distance education course: Management Support Systems, implementing the outlined technique.

1. INTRODUCTION

The use of the WWW as an information system can reduce average study time by better and more efficient information provision, as well as relieve the instructor of some administrative burdens. Besides an electronic course-organizer site, especially a hyperlinked site can be much more than a source of information. It can become a learning environment for the course itself. WWW-based distance education is a revolutionary leap, which brings out the needs and requirements of a new generation of learners, who wouldn't 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 of a consumer. There is a new vision developed during the past 15-20 years, strongly influenced by the social and cognitive sciences. The educational system is now focused on learning rather than on teaching. Distance education has always taken advantage from the development of communications [1 and 3]. In the past, the post service and new forms of mail delivery have allowed a big rise of courses by mail. Up to-day the communication technology plays the same role: in the developed countries, the technological tools already available or currently under development will result in a useful and friendly workplace in every home.

In the paper we identify the milestones of a technique developed to meet the needs of a new type of learning, which beneficially exploits the domain of the WWW-based distance-learning courses. The distance education course

“Management Support Systems” is presented. It is based on [4].

One of the most important tasks of the manager is that of decision making, whether as an individual or as one of a group. Its quality is critical to the success of any business organization and it comes into all aspects of business and organizational activity.

Mueller (1994) [2] has found that the use of WWW as an information system can reduce average study time by better and more efficient information provision, as well as relieve the instructor of some administrative burdens. Besides an electronic course-organizer site, especially a hyperlinked site, can be much more than a source of information; it can become a learning environment for the course itself. WWW-based distance education is a revolutionary leap, which brings out the needs and requirements of a new generation of learners who wouldn't 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 reflect in a better way the complexity of the learning process and learner's role in education – that of an explorer and creator rather than of a consumer.

In the following we'll try to identify the milestones of a technique, developed to meet the needs of a new type of learning which beneficially exploits the domain of the WWW-based distance learning course.

2. STRUCTURE OF A WWW-BASED DISTANCE COURSE

The core text for the course sessions is prepared as HTML files, available on the Web. Each file is a separate session, made up of the following parts:

- Introduction to the session;
- Aims and Objectives;
- Historical facts;
- Definitions of the important terms used in the session;
- Session reading text;
- Case study;
- Exercises with link to the correct answers;

- Link to a list with connections to Web sites with related to the topic information.

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 papers, which discuss various issues and elaborate on the topic.

The structure of a course is shown in Figure 1. The lines stand for the links within the session and between the modules and files. A workshop is pointed out as a separate session, where learners will be given the opportunity to do some practice work on the basis of assignments. The outcomes are sent to the instructor for assessment.

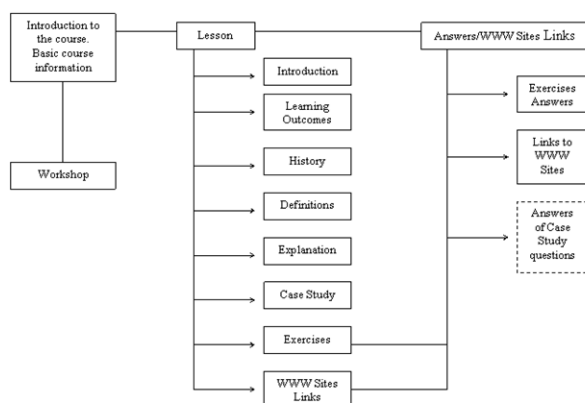


Figure 1. General structure of WWW-based distance education course

3. THEORY AND PRACTICE INTEGRATED

Integration of theory into practice has always offering a challenge, particularly, when there is no visual contact between instructor and learner. So, the selection of skills-oriented and skills-developing type of exercises is of paramount significance because they contribute to the building up of learner's confidence, and is a real incentive for further practice. Each session should be well-provided with a panel of such exercises including:

- A matching exercise;
- A multiple choice exercise;
- A gap-filling exercise;
- An open-question.

The correct answers should be supplied in another HTML file with a key to the access.

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.

4. ASSESSMENTS

Throughout the distance course of education, learners should be assessed formally.

The formal assessment will be continuous assessment of a learner's contribution. It will have three elements:

- 30% of the mark will be awarded for an essay of approximately 1,000 words on an assigned topic. It has to be completed and sent to the teacher after one-third of the course has elapsed;
- 30% of the mark will reflect the work done by the learners during their workshops;
- 40% will be awarded for the final assessment which can be in the form of:
 1. An extended written assignment in essay form of approximately 3,000 words (excluding diagrams, tables, etc.);
 2. A literature survey of approximately the same length;
 3. An individual or group project.

A choice of approved assignment topics should be given and the completed work must be handed in a week before the end of the course. It should indicate 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.

5. METHODOLOGICAL ASPECTS

There are some basic requirements applied to the effective use of any learning environment, which we should not forget in the case of WWW-based distance learning either. A medium should be:

- Clearly supportive to the learning objectives;
- One that 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 pace 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.

The learning in the new hyperlinked environment contributes to the building up of a number of skills, which are to become inherent in the educational practices of the new generation of learners, such as:

- To quickly orient oneself, locate and pick the needed information in the WWW environment;
- To communicate critically by e-mail (e.g. to back up one's ideas, ask for advice, etc.);
- To learn how to do project work;
- To select, process and summarize information in the form of essay (portfolios);
- To apply knowledge to a problem-solving situation (case study).

6. COURSE DESIGN

While there is considerable experience with the design of courses involving television-type tele-learning and video-conferencing as well as computer conferencing, a relatively new design area is that of courses entirely conducted via a computer network, primarily the Internet. This sort of course design must take into account the specific character of the hyperlinked medium with a number of key design issues:

- The balance between links and references to external sources and locally available materials;
- The extent to which communication and information should be integrated in the course;
- The design of the WWW site as an interactive learning site;
- The learning materials in the course site are hyperlinked so that the learner is encouraged to search and move about as she/he wishes.

Some further technical issues reflecting the specific hyperlinked medium should include:

- Proper choice of the background color and the lettering color – psychologically recommended color combinations must be used for the total design of the site so that the learner can make the most of the supplied information;
- Proper choice of letter type – the text can be made best readable for the learner if the letters are middle-sized. Since the content is wholly meant for reading, the use of “serif” font is also admitted;
- Organizing the text content related to the use of hyperlinks. When structuring the text, it is advisable to use the pseudo-linear method, where at the beginning of the session the learner is given the content of the main items and by means of hyperlinks she/he can easily refer to any topic she/he wished to go. Apart from references to each content item, links can

be formed, if necessary within paragraphs themselves;

- Proper choice of visuals which to be included in the text. It will be for the length of the site if color pictures are included in the total design. Beware for graphic drawings and formats, which will burden and delay the loading of the WWW site;
- Use of graphs and charts in the texts to visualize the content. Perception and apprehension of the learning content is enhanced in the cases within graphs and charts are used;
- Observing uniform design in the making of each session. Uniform graphic and color design of the sessions should be observed throughout the course. Different size or color type, different background color or different layout of the information should not be admitted. The same relates to the web sites with the right answers of the sessions' exercises as well as the references to other WWW sites;
- Consistency in the content structure. Each session should be compiled of one and the same parts. It is advisable all correct answers to be supplied in another HTML file. The same file may provide the hyperlinks to sites related to the topic information;
- Links to other WWW sites related to the learning material. They can automatically get access to the places and from there they can access further information, which, in actual facts, augments the accessible sources of information and makes them infinite.

7. WWW-BASED DISTANCE EDUCATION COURSE “MANAGEMENT SUPPORT SYSTEMS” OUTLINE

The course consists of 14 sessions, one of which is prepared as a workshop. The course starts with an introduction page where are described:

- the aims and learning outcomes of the course;
- required and recommended reading for each session;
- course content;
- assessment;
- direct contact with the teacher ;
- link to every course session.

From the list with sessions the students “clicks” on the one that is due to be studied and the file with the required session is automatically loaded. The students can freely move through the modules

of the session – “back to the top” buttons are provided at the end of each module.

If questions to the instructor has occurred during the learning process, the student has to go back to the introduction page where is provided a way to contact the instructor. This connection is done using e-mail, as the most popular and wide spread mode of WWW-based communication.

The link to all course sessions is provided only from the introduction page. The reason for this is the list with before and after sessions recommended and obligatory reading it has been described only there, as well as other important information which can be used during the studding process.

The main course screens are given on Figures 2-7.



Figure 2. Course home page



Figure 3. Course outline

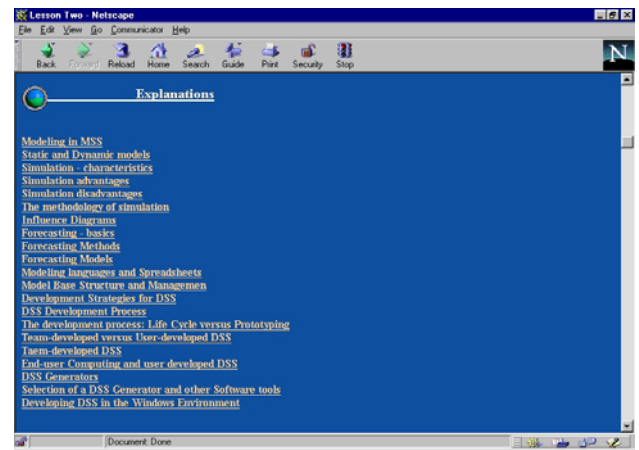


Figure 4. First page of a course session

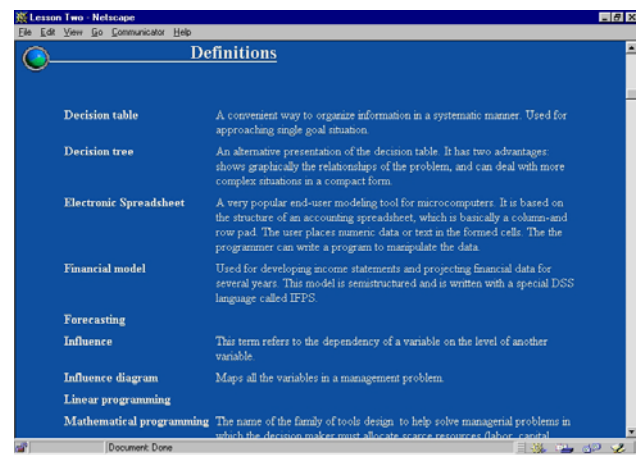


Figure 5. Definition part of the sessions

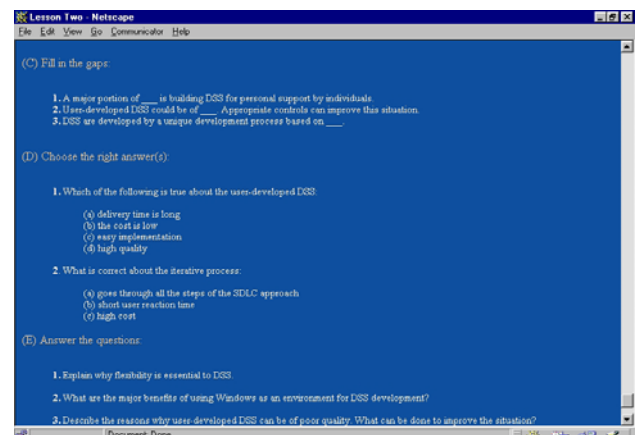
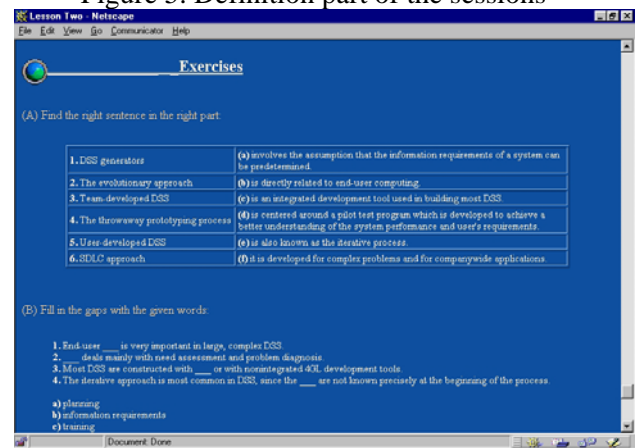


Figure 6. Examples of the exercise pages



Figure 7. Connection to other Internet recourse pages

8. COURSE EVALUATION

Twenty-five third year students from Sofia University, the Faculty of Mathematics and Informatics were asked to give their provisional opinion on the course by examining the pilot copy and answering a questionnaire. The outcome is as follows:

- Regarding the layout, navigation and movement within the text through hyperlinks, all students unanimously say, that the navigation of the course allows free and natural movement of the learners within the content, and contributes to prompt and easy orientation of the reader;
- As a whole, the students have not been lost in the “sea of information” because of good structuring and consistency of the layout and content. In rare instances, impediments have occurred due to lack of good knowledge of the language of the course (English) on the one hand, and lack of experience in hyperlinked environment on the other;
- The division of the learning material into modules is positively assessed. Moreover, in most opinions, it is pointed out as stimulating better apprehension and acquisition of the learning content, avoiding misinterpretation;
- Students are all positive about the introduction, historical facts and definitions of widely used terms, which is considered as great help for them with less background on the matter;
- 95% are not confused by the volume of the material in the sessions;
- 100% think of the design of the course as one being good and congenial. For those who have approached the distant course first time, the examined course has been

attractive and appealing, particularly with the well-handled and laid out tables, graphs and charts;

- The supplied hyperlinks of sites with additional information, delivered in every session are highly appreciated. For 56% it has been a good opportunity to apply knowledge to concrete human life situations. Some find that content is even more beneficial than the basic content of the topics;
- 44% hold the opinion that the information supplied in the course is exhaustive and extensive enough to use additional material;
- All students convinced that the exercises in each session are undoubtedly useful and rewarding for their efforts because through them they gain confidence and incentive to prepare well for other form of the exam for the course.

In conclusion, the web-based distance course has been appreciated but a surprisingly 92% of the students have pointed out as preferable the traditional face-to-face learning forms with the traditional role of the teacher.

9. CONCLUSIONS

Similar to the development of a good textbook, the development of good educational software will be a long-term process of trials and errors that will need continuous draw on the experience of the best instructors, those who respond to the needs of individual learners. As their experience of the application of the new technologies grows, instructors are likely to exert a stronger influence than they have had up to now on the development of these technologies into effective teaching and learning tools. Let's hope that in the very near future both learners and instructors will have the expertise to endlessly surf the Internet without getting lost on the “information superhighway”.

10. REFERENCES

- [1]. “Distance Education & the Web” references, http://ccism.pc.athabascau.ca/html/ccism/deresrce/ride/html.xml#web_de
- [2]. Collis B., Tele-Learning in a Digital World. The Future of Distance Learning, 2nd edition, International Thomson Computer Press, 1997
- [3]. Michael Simonson, Sharon E. Smaldino, Michael Albright, Susan Zvacek, Teaching and Learning at a Distance: Foundations of Distance Education, 2/E, Prentice Hall, 2003
- [4]. Turban, E. and Aronson, J.E.. Decision Support Systems and Intelligent Systems, 6th Edition. Prentice Hall, 2003