

## Didactical Issues of E-learning- Problems and Future Trends

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**Abstract:** *In the paper three basic didactical issues are discussed- the didactical structure of the e-learning course, the choice of didactical methods and the planning of learning activities. Some problems in the development of e-learning in Bulgaria are summarized*

**Key words:** *e-learning, didactics,*

### INTRODUCTION

The rapid development of the information society which marks the nowadays global and competitive environment gave rise to extremely dynamic changes in the various tools and technologies applied to the learning process. Ten years ago the concepts Computer Based Training, Computer Based Assessment, Computer Assisted Instruction, etc. were introduced and the idea about Internet Based Instruction was hardly mentioned. Today "e-learning" becomes one of the most up-to-date expressions.

There are quite different definitions of the concept 'e-learning'. Let's analyze some of them.

Definition 1: *"The process of formal and informal learning and training activities, processes, communities and events via the use of all electronic media like Internet, intranet, extranet, CD-ROM, video tape, TV, cell phones, personal organizers et cetera."*[3]

Definition 2: *"The use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration"*. [4]

Definition 3: *"Broad definition of the field of using technology to deliver learning and training programs, typically used to describe media such as CD-ROM, Internet, Intranet, wireless and mobile learning. Some include Knowledge Management as a form of e-learning. Took awhile for the right term to come about, circa 1995 it was all called "Internet based Training", then "Web-based Training" (to clarify that delivery could be on the Inter- or Intra-net), then "Online Learning" and finally e-learning, adopting the in vogue use of "e-" during the dot com boom. The "e-" breakthrough enabled the industry to raise hundreds of millions from venture capitalists who would invest in any industry that started with this magic letter."*[5]

Taking into account these definitions it can be summarized that all of them comprise the combination and interaction of the following basic components: learning activities and teaching via different electronic media. That is why it becomes very important to be aware of some didactical and technological aspects during the development process of any e-learning course. In this context the main goal of this paper is to investigate the didactical aspects of e-learning as it concerns the development of e-learning environments as well as it refers to the use of these environments and all proper technological tools. The strong expectations that high level technological tools will increase the quality of any e-learning course often follow to an underestimation of the educational objectives being set. According to our experience the crucial question is not "What technological tools are to be used during the development process of e-learning courses?" The core problem is "How to design and plan an e-learning course that ensures the achievement of the educational objectives?" [2]

Obviously the technologies related to e-learning advance very rapidly while the methodology how to apply them drops behind. The reason for this impedance can be easily understood taking into account the fact that the preparation and implementation of any pedagogical experiment requires one or one and a half year at minimum. Meantime technologies evolve within six, seven months.

Last but not least the existing psychological and pedagogical theories about learning can be used as a framework during the development process of e-learning environments that conform to different cognitive and learning styles.

In the present paper we discuss issues concerning some basic aspects of the e-learning methodology. More precisely we consider the development and implementation of e-learning courses and the design of e-learning environments. In addition we try to analyze and outline crucial problems at introducing e-learning in Bulgaria.

## DIDACTICAL ISSUES OF E-LEARNING

The didactical issues of e-learning can be split in two main directions:

- Development of e-learning environments
- Development of learning content and implementation of e-learning courses

We will discuss them further.

### 1. Development of e-learning environments

Recently the opinion that the existing e-learning environments do not reflect and comply with modern learning theories prevails. Not until the last two or three years a trend towards including pedagogical issues in international standards and e-learning specifications is noticed. Nevertheless in the recommendations of the workshop "Creating, sharing and reusing e-Learning content" of the European Committee (27-28 of October, 2004) the necessity of "develop pedagogically sound and practically useful standards and specifications" has been stressed.

A modern e-learning environment not only has to offer the most recent technologies but it has to possess high level of usability also. This environment is to be adaptive to different learning models, e.g. constructivist learning, collaborative learning, experimental learning, problem based learning.

In our opinion it is obligatory to take into account the educational objectives during the learning process. There is no sense to carry out some didactical activities without submit them to concrete educational goals. In the didactical structure of more e-learning courses the educational objectives are described, but usually they are only described without a feed back with learning content and measurement of level of achievement of the set learning objectives. The present e-learning systems do not offer adequate tools to measure the achievement of educational objectives from the learner.

The adaptability of an e-learning system could be increased if a possibility to create learning scenarios exists. Examples of similar e-learning systems comprise the open source e-learning system Moodle and PeU 2.0[1] developed at Plovdiv University, Bulgaria. PeU 2.0 gives up a smart visual environment where nonlinear learning scenarios can be developed.

### 2. Development of learning content and implementation of e-learning courses

From a didactical point of view during the development and implementation of any e-learning course three basic issues, strongly connected each other are to be considered. They are the didactical structure of the course, the didactical methods and the planning of the different educational activities. (Figure 1).

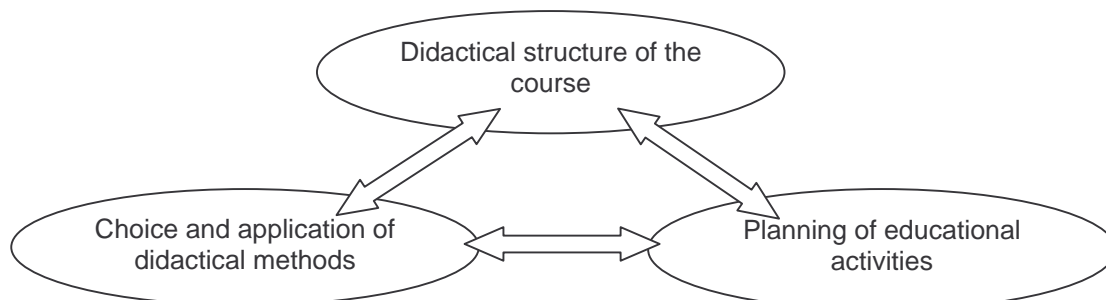


Figure 1. Basic didactical issues of e-learning course

The most used elements in the present e-learning courses are described in [2]. They conform the scheme in Figure 2

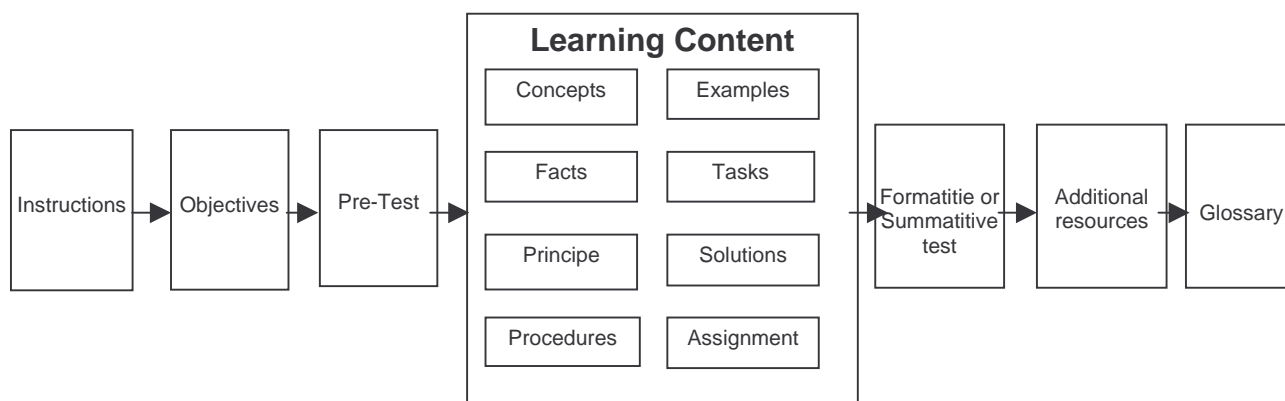


Figure 2. Basic didactical elements in e-learning course

Here the following reasonable questions that are to be discussed arise:

Are there new components to be added to this very often proposed structure of an e-learning course?

What is to be the future development of the different elements building an e-learning course?

What kinds of test elements are suitable and can be implemented within an e-learning course?

The answers of these questions are ambiguous and depend on many factors. In order to obtain a reliable data it is necessary to carry out proper pedagogical experiments.

The second issue to be considered is the choice of didactical methods. The basic methods that appear to be useful for e-learning could be summarized as follows:

- Lecture;
- Discussion;
- Interactive simulation;
- Problem solving;
- Project based method;
- Exercise;
- Methods of assessment and evaluation.

All of the methods mentioned above could be technologically enhanced. Some examples of the technological tools to support and implement these methods are presented in Figure 3.

The choice of the proper methods depends on:

- The form of education- distance education or blended education;
- The type of learning- self depended learning or collaborative learning.

In the case of self depended learning the most suitable methods are lecture delivering, interactive simulation, problem based method, exercises, learning scenarios, defined by the authors of the learning content. For collaborative learning the group working methods, e.g. projects based method, discussion are suitable.

- Psychological characteristics of the learners.

The learning styles of learners influence the choice of the didactical methods.

Consider the constructivist's learners. If this is the case, the methods as exercises, project development, simulation, problem solving are more suitable than lecture delivering. For young learners a game based approach and interactive simulation are fitting.

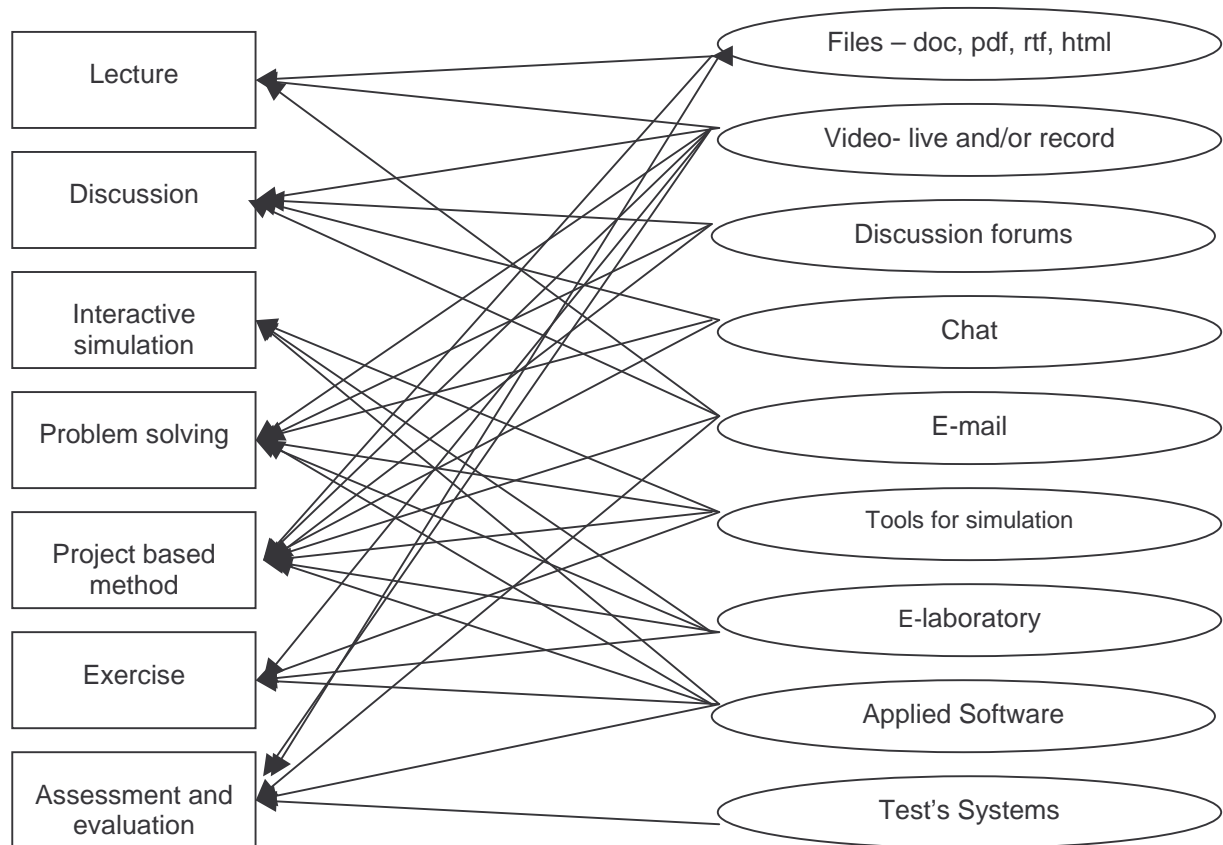


Figure 3. Relationships among didactical methods and appropriated technological tools

### 3. Planning of educational activities

The planning of the educational activities along the time represents the third issue. As it concerns the didactical issues of e-learning, planning includes:

- Duration for studying a concrete module;
- Time and duration of on-line or face to face consultations with tutors;
- Schedules for passing of assessment, sending of assignments,
- Arrangement of discussions

Nevertheless the e-learning technologies give rise to the possibility of a continuous learning any place at any time the learning process is to be terminated. That is why it is necessary to determine the time and duration of any activity. The learning process can not be endless.

### STATE OF THE ART OF –E-LEARNING IN BULGARIA

The rapid development of the information society led to non-reversible processes in teaching where the focus is moved on technology enhanced education. In Bulgaria there are good prerequisites to develop up-to-date teaching. However there are also some limitations that are to be overcome.

Nobody denies the presence of:

- Skilled experts in information and communication technologies, didactics, psychology and different subject areas.
- Commercial, open source and custom-tailored e-learning environments.
- Hardware equipment.
- Better communication services.

Meantime there is lack of:

- Content for e-learning courses. Most of the existing courses are in area of computer sciences and systems.
- Joint investigations concerning:
  - The methodology for the development and implementation of e-learning courses;
  - The usability of e-learning courses;
  - The effectiveness of a given e-learning course.
- The use of adequate didactical terminology.

## **CONCLUSIONS**

The future of e-learning imposes:

- The development of adaptive e-learning environments that take into account the pedagogical and psychological theories of learning.
- Enhancement of the standards and specifications for e-learning as it concerns some didactical issues.
- Investigations concerning the elaboration of the methodology for developing learning content and conducting e-learning with the technological tools being worked out.
- Unifying the used terminology in Bulgarian language.

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