Learning information content by distance learning, with a model of Virtual Internet classroom, by using ASP technology in a base environment

RADOVAN TOMIĆ, ŽELJKO MARČIĆEVIĆ, NENAD DOKIĆ
Higher School of Professional Business Studies,
Vladimira Perića - Valtera 4, Novi Sad
SERBIA
vpskola@uns.ac.rs http://www.vps.ns.ac.rs

Abstract: - The paper will show the structure and resources of basic modular units within the system of interactive, online virtual Internet classroom for collaborative strategies in open educational environment in a shared workspace of the Internet. Virtual Hypermedia Classroom is implemented by using ASP development technology with a user interface toward distributed databases.

Key-Words: - Distance learning model, a virtual Internet classroom, ASP technology, distributed databases.

1 Introduction
Modern society is characterized by dynamic changes, intensive development of production, information and telecommunication technologies, thus creating conditions for qualitative changes in all spheres of society, especially in education [1]. The imperative of the time in which we live is to provide a school which will be truly democratic institution and tailored according to the needs of every student. Previous teaching practice in schools, whose foundations were laid several centuries ago, is objectively opposed to our social commitment.

In the last ten years a reform of the education system was carried out in most European countries. Development of school autonomy and greater participation of different actors in her life are generally accepted principles that lead to better learning outcomes [6]. Within the strategy to reform of our education system under the process of decentralization, support for the development of school autonomy was planned and has already started. Promoting employability and active citizenship are apostrophized as equally important and interrelated goals of lifelong learning [3]. Basically, their implementation is firmly established in the belief that the concept of lifelong learning and education has a key role. Computerization of education is a necessity and obligation of this century [5]. The use of information technologies will allow the creation of new base and new opportunities for improving the teaching process. Economic, technological, social factors must be taken into consideration in order to enable that the necessary information are available to everyone, at any place and at any time. The society must prepare qualified and trained personnel and thus enable the influx of new information technologies in the education system [2].

2 The problems of traditional teaching
Research, our as well as foreign, prove convincingly that in the traditional teaching, mainly in the form of lectures, a lot of time is lost on checking student assignments, various recordings, searching through the didactic materials and other unproductive activities.

The results of students' knowledge testing in primary and secondary schools in the Republic of Serbia, carried out on calibrated tests in the last few school years, show that students have not mastered even fifty percent of the material which is prescribed by the curriculum. This is very unfavorable result which warns that the quality of the teaching process must be improved [5].

The organization of teaching, in addition to professional didactic-methodical readiness of teachers, is one of the essential conditions for successful teaching. The role of teachers in traditional teaching is mainly reduced to lectures and the occasional control of student knowledge, although it should be permanent, much richer and diverse. The teacher has to direct students how to learn so that they became independent, to advise them and to help them so that they can make progress more quickly [2]. Position of students in
traditional teaching is very unfavorable. Their job is to listen to the teacher's presentation and to reproduce the knowledge on a teacher's request. The teaching process is focused on memorization which is just one of many thought functions and one of the easiest and least demanding. This passive position leads to neglecting and slowing down of the student's development. One of the main causes of low efficiency of teaching lies in the fact that interaction, as mutual action and behavior of many individuals in the teaching process is very poor. Communication is poor and the information flows from teacher to pupil [4].

In traditional teaching the frontal method has a convincing preponderance. In this method, regarding the previous knowledge and skills, unequal pupils are put in front of the same requirements. Classes are aimed at average students. This is too difficult for less skilled students and too easy for the better students. So it does not suit the needs of even both of them. Lessons are not differentiated and individualized; it is not adapted to the possibilities, interests and needs of different students [3].

Because knowledge is the most important condition for the physical, spiritual, cultural and general social progress it is necessary to take more parallel measures in order to improve the situation in education in our schools, to modernize it. It is necessary to improve curriculum, to enhance the overall technical and didactic-methodical readiness of teachers, raise the level of material and technical equipment in schools, i.e. to use the achievements of modern educational technology [5].

3 Education in the virtual classroom

Distance education is a form of impersonal, flexible, interactive and proactive communication of individuals or groups with other entities who are both physically distant and time away, in order to acquire knowledge, skills, experience and creativity in any field of human activity. Applied to the individual it is a non-conventional acquiring of knowledge that is nonconformist, open and limited in no way [12].

Interactive Virtual Hypermedia Internet classroom belongs to the one of the greatest achievements of modern educational technologies. Students and teachers who are on the Internet in a virtual hypermedia classroom have the access at any time in any place to teaching material from which they can get the essence of intellectual education.

Teaching model of Trans-medial mega interactive classroom allows one to overcome the physical and time limits set by the educational process. This model also allows you to create rich, dynamic and stimulating virtual environment, creating new learning context that directly affects the perception, activity and memory and develops a new way of thinking [5].

Entry into the shared educational environment is with no restrictions. All that students need to begin the entire process of learning from anywhere is a personal computer. The interaction is achieved between the remote users in different parts of the world as a process of intercultural education and cooperative learning strategies in an open distant system.

4 Main units of the Virtual Internet classroom model

The basic functions of the distant model are grouped by scalable modules. Modules should be as independent as possible from each other. Independence of modules of the system provides greater flexibility in redefining the models and eventual modifications and updates of the system. The basic modular units of the Virtual Internet classroom are [7]:

Figure 1. Logical structure of scalable modules in the system Virtual Internet classrooms.

1. The administrative module (supervisory module with system administrators).
2. Module for managing users and permissions (password for the record, course selection, course level).
4. Module to maintain teaching materials, e-lessons (hypermedia lessons, examples in the lesson, questions from the lessons and learning from lectures).
6. Module base of concepts, words (vocabulary, FAQ - frequently asked questions, virtual professor, consultant, consultative learning, intelligent library).
7. Module for mutual communication E-mail - multifunction connection with a real teacher and other students, consultative learning.
8. Module for communication Chat - forum discussion with the teacher and other participants - discussion learning.
9. Module for mutual communication Teleconference system of teachers and students in real time - collaborative learning.
10. Module virtual labs (simulation, experiment, learning by experiment).
11. Module virtual sections (higher thinking exercises).
12. Module for practice (assignments, seminar papers, Quiz-game, homework, learning by performing tasks).
13. Module to check achievement test (evaluation, self assessment, pre-exam, testing knowledge, pre-test, classic pre-questioning in college).
14. Module to generate various reports (reports about the test or exam on a virtual bulletin board and printer).
15. Module for signing up for exams (exam in college).
16. Module for publication (publisher and administrator are responsible for adding new items – classes-curriculum content and cancellation of previous issues).

Transmedial mega virtual interactive Internet classroom allows the transfer of interactive hypermedia instruction in a shared virtual cyber space.

Virtual Internet classroom in cyber space environment provides the conditions for distant education of information content using the Internet telecommunications infrastructure. Implemented and designed model has the function of realization of the curriculum at any time (full time) and subject matter in the domain of information technology in any location (shared environment) [10].

The model is intended for [14]:

- On-line synchronous communication coordinated in real-time with two-way interactive technology, students and a real teacher – instructor are present (a discussion forum, chat, e-mail, conferencing system).
- On-line synchronous communication adjusted in real time with a single interactive technology, students are present a real teacher is absent from the communication lines and site (adaptive virtual professor, intelligent database concepts, intelligent testing).
- On-line asynchronous communication with time delay, e-students present and a real teacher is not present (e-mail).

The main navigation menu that is used in the exploitation of virtual Internet classroom is a graphical interface with hypermedia base toward other segments of the server-client ASP technology [7]:

- Home DE
- E-Lectures,
- Guestbook,
- Search,
- FAQ,
- Messages,
- Test,
- Virtual Consultant
- Teamwork,
- Discussion forum,
- Virtual Laboratory,
- Tasks,
- Web Conference,
- The records in the database,
- Virtual Library,
- Exam application.

5 Educational materials for learning on the web portal of virtual classrooms

Hypermedia interactive virtual trans-medial Internet classroom has available educational units from a link of e-lectures:

- Microsoft Word, Microsoft Excel,
- Microsoft Power Point,
- Microsoft Front Page,
- Microsoft Windows, Dreamweaver,
- Multidiscipline, Corel,
- Internet, Outlook Express,
- Delphi, C + +,
- ICQ, Multimedia,
- Robotics, Hardware,
- Memory, Monitors,
- Peripherals, Keyboard,
- Video card.

Virtual Classroom is implemented as ASP.NET
application to NET. Data is stored in SQL Server 2008 database [9]. User interaction is done via a Web form and web browser. Virtual Classroom is available through the Web-a, and different levels of access are defined [8]. The first level contains the publicly available data page, and all users can access them without identifying, that is, initialization. The second level, which contains data from entry forms, is available only to authorized users (i.e. users with a user account). The third level is for administrators and allows access to all data for registration, and allows you to manage users [8].

Therefore, it will be necessary to launch software for virtual internet classroom with HTTP://LocalHost/rad/default.htm.

6 Virtual Internet Classroom Components

Ways in which tele-students communicate in virtual internet classroom are also presented. These ways refer to automatic information updating in forms in the function of data collection and data entry by users – the Guestbook. Dynamic ASP structure is created in order to enable students to enter their opinion about virtual classroom. This structure has the function of accepting data by e-student and sending data into the database. Adding a component for global search of all internet addresses (URL) through MSN browser – Microsoft Portal, will make the basic component in the structure of virtual internet classroom [12].

FAQ Component – frequently asked questions and answers. In this option of FAQ, there is a floating page for Frequently Asked Questions by employing HTML page patterns. Experiments have been made to replace windows for Normal and HTML text templates by personal texts [14].

Mailing list – multipurpose link with a real teacher. This two way information board belongs to the relevant teacher for the subject who will collect information related to the subject of informatics. Through the information board, relevant teacher will also receive messages from students. Students should review information board contents occasionally [16].

Form for enquiries (data collection) and massages addressed to a teacher. Tele-students can send messages, that is, a question to the relevant teacher – instructor [15].

Virtual Teacher – Consultant Component [20]. During the consultation process, a student will send his questions, that is, consultation requests, in a relatively free form, or by using phrases, key words
and/or logical operators. A virtual teacher will provide an answer - advice. If a student is satisfied, he can finish consultations. If he is not satisfied, the student has an opportunity to address the question to the real teacher who will support relevant subject. In such a case, the student will receive an answer as well. Virtual teacher will adopt this new knowledge, thus by monitoring students’ requests he will also learn.

**Component for Interactive Knowledge Test.**
An interactive test for checking knowledge belongs to a group of alternative tests. A tele-student is given an opportunity during exercises to define a correct answer on the basis of five offered answers [1].

The use of web location in order to track projects for supporting cooperative team work of students is within the **module for corporative team work** where a tele-student sends a notion and a text about the notion into knowledge database. Knowledge database is constantly expanding by means of new updating of syllables [21].

![Figure 5. Module for Team Work of Students.](image)

**Component for Exercises** is primarily intended for practising subject matter in the form of questions. It is necessary to obtain tasks from the server at the local disk by means of download in PDF, ZIP and PPS formats. Virtual internet classroom is connected with databases on the internet and classroom web location [9].

**Web Conference System Component** is implemented into virtual internet classroom. The system is supported by collaboration web conferences through the Bridgit™ [10]. The level of interaction employing web video conferencing system Skype™ is very high. On-line synchronous communication is established in real time and with two way interaction channel. This technology enables interaction with every individual in information shared cyber space of the internet.

**Virtual Laboratory** in the system of virtual internet classroom. Virtual laboratory gives opportunities for using e-simulation tutor for TriSpectives™ [22].

**Student evidence component** through e-form. This form enables evidencing students in the virtual internet classroom and includes the following relevant attributes [16]:
- Students’ surnames,
- Students’ names,
- Students’ addresses,
- Towns in which they live,
- Regions in which they are,
- Postal codes,
- Countries of origin,
- Students’ telephones.

**Virtual Library Component.** Options represented in the module of virtual library are:
- Books, Foreign books,
- Bookshops, Magazines, Links.
Component for Exam Application and taking over (download) of exam questions form virtual internet classroom, that is, from server onto local computer of a tele-student. Tele-students in the system of virtual internet classroom have also possibilities to apply for an exam through the link Exam Application. The exam is later on taken in a traditional way “face to face” at the physical destination of an educational institution [13].

![Image](image.png)

Figure 7. Component for Exam Application.

The full performance of the use of this virtual system will be accomplished through interactive dual communication channels with large throughput capacity, in particular, when using web teleconferencing system is concerned.

We would like to recommend the use of Wireless-WiFi-WLAN of wireless internet access when exploiting the software for virtual internet classroom. The selected technology refers to Wireless-WiFi-WLAN [23].

7 Conclusion

For the purpose of increasing and improving the efficiency of our education process and of learning process itself and of the overall education system, it will be necessary to implement new education models with new education technologies [18]. Therefore, it will be necessary to permanently analyze and monitor latest developments in the area of modern information and communication educational technologies. It will also be necessary to take into considerations problems of applying modern educational technologies from the standpoint of other sciences such as psychology, pedagogy, philosophy, and sociology within various systems of education and schooling. With the existing state of the education system, it is necessary to introduce into practice new information technologies and deploy the overall structure of internet. The utilization of telecommunication infrastructure and exploitation of information and telecommunication technologies will undoubtedly lead to increased efficiency and quality of both teaching and learning processes [19]. Today’s students belong to digital generation and therefore, they should be educated in such a context [17].

References:

[20] MONASH University, Unlocking open learning, Centre for Distance Learning, Australia.
[22] EDEN – European Distance Education Network, 2006 EDEN Conference.