

# Designing an Interactive System for the Implementation of Distance Learning Based on Progressive Information Technology

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## Abstract

New information technologies initiate the emergence of new approaches to the implementation of the learning, today we can distinguish many learning technologies, based on the use of computer technology.

The implemented software for the described structure of the Interactive System for the Implementation of Distance Learning (ISIDL) based on one information technology is not possible. In our opinion, the combination of the following technologies is sufficient and optimal Macromedia Shockwave + Java+ SQL+ Active Server page.

In conclusion, we note that the authors are developed course, oriented in use in ISIDL, there will be questions of the relationship of opportunity and hypermedia in the course. For example, should the training course include a large number of video clips? What is the role of sound?

**Keywords:** Implementation, Learning, Developing, Complexity, Education process, System, Training.

## INTRODUCTION

New information technologies initiate the emergence of new approaches to the implementation of the learning, today we can distinguish the following learning technologies, based on the use of computer technology:

1. Computer-based training (CBT) – implementation of the learning system based on the local computer, i.e. personal computer-based learning system. The main way to implement this technology is computer tutorials and multimedia applications. This technology uses traditional methods of delivering training systems to a specific use. Management action locally, that is, it course only the personal computer of the student on with the training system is running.
2. Web based training (WBT) – implementation of the learning system based on internet technology, that is, the online learning system. The essence of this technology

lies in the fact that the entire teaching material is located on a remote server and management distantly i.e. issued from a remote system (learning server) on the basis of stoical data about the student, transferred to a local computing system (student computer): with this technology, internet tools are also used to deliver education material to a specific user.

3. Web –Rom – combined form of the learning system. Large multimedia educational material (sound accompaniment, video clips, computer animation) fit on magnetic disks or CD, that is delivered to the learner in the traditional way. The management activities are transmitted via the internet. This form of implementation of the learning system is most alternative for our country, as considering the public quality of internet service delivery, unfortunately, it should be noted that the transfer of large amounts of data in time acceptable from the point of view of training is unlikely. Component of a model of the student data on the results of the test tasks performed by students, the number of errors made in its volume is small, and the transfer of such data over the internet is not difficult.

The last two learning technologies are distance learning technologies. The effectiveness of distance learning significantly depends on the form and quality of the provision of educational materials. One of the ways to improve the quality of teaching materials and forms of their presentation is the development of an interactive distance learning implementation system (ISIDL). Numerous aspects and related to the design of such a system based on modern progressive information technologies are considered in this paper.

## DESCRIPTION OF THE PROPOSED SYSTEM (ISIDL)

ISIDL is designed to computerize the development of computer-based learning systems for distance learning and for an arbitrary subject area. For design the ISIDL it is necessary to carry out its decomposition of four closely related

components: Server, Administrator, Tutor, and trainee. The core ISIDL through which the interaction of all its components is carried out is the server components. With these components are performed all operations associated with the provision of management action on the students by sorting, presenting training materials in various disciplines, editing knowledge base and databases of educational materials with the arrangement of links between them (both with one disciplines, and interdisciplinary), storage and modification of protocols and electronic journals. Component administrator designed for operational configuration of ISIDL. This component allows you to perform the following functions: management of users of ISIDL, determination of users access to ISIDL, distribution of trainees by tutor. Tutor designed to organize the monitoring of the state of the school subject. This component provides the ability to perform the following functions: exerting management on the learner depending on the passage of their training course, trainee model adjustment, protocol visualization, and electronic journal generation course progress reports, an organization of communication between tutors and their assigned students. The component (trainee) designed directly for the implementation of the learning process. This component allows the student to perform the following functions: get access to ISIDL, start a new course or continue the learning from that moment on which the learners will stop during the previous session in ISIDL, get any course materials regardless of their data format, controls the course of the learning process with the ability to leave the ISIDL at any time, self-test and checking. This component must also record all the actions of the student in the protocol file, a test results in the electronic journal and transmit this information to the server.

#### PROGRAM SUPPORT FOR ISIDL IMPLEMENTATION

For the software implementation of the above-described structure of the ISIDL, it is necessary to analyze the capabilities of modern information technology and tools. In the course or research works, the following software tools and technologies were considered:

1. Java –technology: it is a platform - the independent language for developing and full-fledged applications for use on networks Internet / Intranet, so, for use on a local computer. Advantages here are cross-platform, flexibility and power of a programming language, a disadvantage, the program can get information about the external environment, but the use of this information shouldn't change the cradle functioning of the program. in this language, it is advisable to implement the user interface component of the administrator, trainee, and tutor.
2. Javascript – this device is script language for browsers Internet. It is similar in structure to Java, but there are some limitations, and dependency on specific client software language is convenient as additional funds to other technologies. It should be noted that this language is not directly applicable to the creation of component trainee, because the logic of its functioning (in particular, the correct answer number) learner can easily learn by viewing the source text of the HTML page in a browser.
3. VB script and active X: these tools are the scripting language for the Internet browser developed by Microsoft. Powerful enough language, however, it is used only with Microsoft software products. The appropriateness of its use in training courses is determined by their authors.
4. Macromedia Shockwave: in our opinion, this is currently the most of representing hypermedia. It allows you to create complete multimedia application learning systems and demos. It components Macromedia sounds edit represents the possibility of creating a soundtrack of the course being developed; using the freehand component, you can prepare a vector and raster images, as well as text information using Macromedia flash, compile all learning materials to present them in the form, acceptable for use in ISIDL.
5. Real Audio and Real Video: this tool is designed to transmit audio and video information over the network, using streaming technology. The essence of this technology is as follows: the audio and video track starts reading and at the same time a buffer is created on the local computer, in which data has stored ahead of time for several seconds, a then parallel to the reading process, the contents of the buffer starts to play. Thus a significant saving of time resources is achieved. In our country, this a technology is possible to use only in local networks, an in global networks and instead it is advisable to use the technology (Web-Room) desirable above.
6. Active server pages: this technology was developed by Microsoft and is compatible only with Microsoft Internet information server4(MIIS.4). In additions, it is a script which runs on the server, and platform independent as the result of these scripts is an HTML document, acceptable for all platforms and system. This technology can be used for software module component (server), responsible for presenting the HTML interface to the components of ISIDL.
7. SQL (Structured Query Language) based on a database management system (DBMS). This type of system is widely used in organizing an application server. They provide a platform – independent, easy to scale, scalable interface between applications and database ISIDL imposes the following restrictions on the management database on SQL: DBMS should ensure the possibility of organizing interaction with the modules of the system, written in Java. For example, using the JDBC (Java Database Connectivity).

#### THE RESULTS

Thus, the software implementation of the above-described structure of the ISIDL based on one information technology is not possible. In our opinion, the combination of the following

technologies is sufficient and optimal Macromedia Shockwave + Java+ SQL+ Active Server page (MIIS 4).

## CONCLUSION AND DISCUSSION

In conclusion, we note that the authors are developed course, oriented in use in ISIDL, there will be questions of the relationship of opportunity and hypermedia in the course. For example, should the training course include a large number of video clips? What is the role of sound?

These questions are as pedagogical (what is cognitive power of various components of hypermedia and their compositions), psychological (comfort of delivery knowledge in the conditions of actually functioning networks), and economic aspects (how much is the creation and distribution of the network course, built without economic indicators).

As practice shows, the use of elements of hypermedia training significantly intensifies the knowledge mastering and skills process. For example, from the theory of learning, it is known that if, when learning using textual information, the intensity of learning is about 25%, and when accompanied by the sound it increases to 50%, then, when sharing text and audio and video information it is approximately 75%.

The presented concept of building an interactive system for the implementation of distance learning (ISIDL) is based only on open standards, which you to deploy it on any software - hardware platforms.

The use of such a system will reduce the complexity and development time for an educational purpose and in general, improve the efficiency of distance learning.

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