



**TECHNOLOGIES FOR USING SOFTWARE PACKAGES TO TEACH
DIGITAL RESOURCE MODELING IN HIGHER EDUCATION**

Siradjev Salokhiddin Negmatovich;

Karshi Institute of Engineering and Economics

"Information Technologies" Teacher of the Department;

email : goldsagf@gmail.com

ABSTRACT

In this article, special attention is paid to how, when choosing didactic and technical means of education, these tools help to organize the activities of students in order to know in this or that field of knowledge. Also, within the framework of an active approach to education, the concept of "activity" is often associated with the concept of "knowledge", that is, it is argued that in order to form knowledge as an element of the consciousness of an individual, it is necessary to organize cognitive activity of the appropriate type, level and size.

KEYWORDS

Information, visualization modeling, teaching methods, forms and tools, software packages, etc.

Introduction

Currently, in pedagogy, there is no unambiguous explanation of the concept of "educational tool" and a single multifaceted classification of educational tools. An educational tool can be understood as a material or ideal object used by a teacher and a student to acquire new knowledge. In that case, all objects and processes (material and materialized) that serve as a source and means (actually means) of educational information for learning the content of educational materials, development and education of students can be said to be educational tools. It should be noted that education is effective when material and ideal educational tools are used to complement and support each other to achieve the goals of the educational process [1].

In addition, the content of education at each level has characteristics specific to that level. But if each level has its own content, the means of mastering them should also have their own characteristics. As the content of education changes, so do the means of education at each level. Each level of formation of educational content must inevitably include its own educational tools [2].

Thus, we: the educational process of training a future specialist; Since students are interested in the process of training for a certain type of professional activity, for example, in the effective use of digital educational resources designed for the active use of computers and special software, solving professional problems in this subject area and at the same time it is necessary to describe the spectrum of informational and instrumental systems that allow the professional activity of a specialist to be automated in solving his professional tasks.

Analysis of literature on the topic (Literature review)

Currently, the authors of a large number of literature, A.Y. Garnayev, S.Y. Garnayev [2005]; M. Morgan [2000]; K. Horstmann, G. Kornelp and other new educational software packages and technologies for a wide range of specialists are given special attention in the scientific works of domestic and foreign researchers. For example, E. T. Vovk [2005], K. P. Isaguliyev [2002], P. Lapin [2003], D. V. Leshchev [2004], D. Y. Tumanov [2004, 2005], R. Reinhardt, S. Daud, D. Lott [2005, 2006]], B. Hall, S. Van [2003] are among them.

When it is called information modeling - we understand the process of managing information processing on the basis of the technology of electronic computing experience using various types of information and instrumental systems in the subject areas, so we teach the technology of using these systems in solving a number of professional tasks and in information systems teaching the main functions, methods and tools used in information processing is an important component of information modeling education.

Research methodology (Research Methodology).

A wide variety of software tools that require the implementation of a computer information model can be considered as a means of teaching information modeling in visual graphs. A special type of computing models (visually in graphs) selected in the teaching of information modeling, as well as the solution of professional tasks corresponding to the main stages of electronic computing experience, where mastering of information-analytical activities by a future specialist takes place taking into account, semi-formal and abstract formal systems as educational tools can be considered as a type of information systems.

Thus, we consider the characteristics of formal and semi-formal systems, as well as professional instrumental systems as a means of teaching information modeling in visual form. When choosing software products, we proceed from the definition of requirements that this or that digital educational resource and educational computer model must satisfy.

- Analysis and results (Analysis and results).

Formal languages as educational tools for building formalized descriptions of information models at different levels in the teaching of information modeling in visual graphs in the form of the "Information Modeling" training course: logical-mathematical languages (the language of formal set theory) and programming languages (operative paradigm).

In addition, according to the classification presented on the website of the multimedia center of information-educational resources (ATR), the place where central electronic educational resources are stored is divided according to the technology of their creation and is represented by the following: 1. Open multimedia systems e-learning modules; 2. Electronic learning modules of virtual collective environments; 3. Electronic information and educational resources (EATR) in local carriers; 4. EATR with textographic network; 5. EATR based on flash technologies; 6. EATR based on java technologies.

We will consider a brief description of the main software tools that implement the technology of development of electronic or digital educational resources of textographic network, flash technologies, java technologies.

1. Java technologies are based on the Java language, which is a platform-independent, object-oriented programming language designed primarily for use on the Internet.

Independent applications (Applications) on the Java platform; Applets (Applets) - programs that work in the browser environment; servlets (Servlets) - small programs that work on the server side and extend the functions of the server; components (JavaBeans, Enterprise JavaBeans) - a part of a program separated into a small functional and separate element with a graphical interface or encapsulated logic of application and data, developed for the purpose of repeated use in component programming technology.

As a Java platform for the development of digital educational resources, primarily in the form of interactive multimedia educational computer models, it is represented by powerful capabilities that combine traditional web technologies with the technology of Java-applets. A Java applet is a byte-code program in Java. Java applets are executed in a web browser using a Java Virtual Machine (JVM) or Sun's AppletViewer, a standalone tool for testing applets. Applets are used to provide interactive features of web applications that cannot be provided by HTML. Because Java bytecode is platform-independent, Java applets can be implemented by browsers on many platforms, including Microsoft Windows, UNIX, Apple, Mac OS, and GNU/Linux, using plug-ins.

To increase the interactive capabilities in the applet, the tools of class libraries (AWT, JFC Swing packages) can be used, which provide mouse and keyboard processing, adding user interface components (records, buttons, text input fields, flags, etc.) to the applet. To use the visual and graphic capabilities in the educational computer model, geometric classes and graphic methods tools (Graphics, Graphics2D classes) can be used, which can create dynamic and interactive images, control the color, size, location of graphic objects, edit the graphic file. Allows adding grid images from a URL to an applet and playing audio clips. Applets are included in a web document with the applet or object tag, and loading an applet into a browser window is done by downloading a web document on the server, just like an applet class.

2. Flash technologies provide more attractive opportunities for the development of interactive and multimedia educational computer models that are easily integrated into web applications and are available in the network mode of operation. Flash represents a well-organized environment for displaying and combining various multimedia tools such as interactive animation, sound files, effects and videos, as well as the ActionScript programming language tool. Special attention is paid to flash technologies for a wide range of specialists in the scientific works of domestic and foreign researchers [3].

Flash can be used to create animations, effects, vector graphics, interactive applications, programs, presentations, and websites. In this case, all components are included in the Flash environment and then saved in a custom format of FLA files. A file in FLA format contains the necessary resources, including images, video footage, sound and software, and can be edited accordingly. The Flash content is then published in compact SWF files for display on various platforms using a Flash player. A file in SWF format is a compiled version of a file in FLA format. In particular, it is possible to import text, mesh and vector graphics, files in PDF format and sound files (for example, in WAV and MRZ formats) into a document in FLA format (from Photoshop, Illustrator and FreeHand documents).

Animation tools represent the unique advantages of Flash technology for visualizing graphical models. Flash has three different mechanisms for animating objects. These are: 1) frame-by-frame ("classic") animation - in which the author creates each frame of the future "cartoon" or imports it from other

applications and sets the sequence of their viewing; 2) automatic animation (also called tweened-animation) — when creating it, the author creates only the first and last frames of multiplication, while Flash automatically generates all intermediate frames; there are two types of tweened-animation, which are: animation based on the movement of the object (motion animation) and animation based on the transformation (changing the shape) of the object (shape animation); 3) script-based animation is the description of the object's behavior in its own Flash language called ActionScript, the syntax of which is similar to the syntax of other scripting languages used in web advertising (for example, JavaScript and VBScript).

Flash technologies, in addition to advanced multimedia tools and the ability to insert compact swf files into web pages, due to the use of standard interface elements (UI components: text fields, buttons, drop-down lists, etc.) and the built-in ActionScript programming language has means of providing interactive communication with the user.

The syntax of the language is similar to that of JavaScript, where script code is executed within an animation timeline [4]. ActionScript is defined as an object-oriented programming language with loosely typed event processing.

According to the presented comparative analysis of opportunities for our choice of technologies and software products (see Table 1), according to the selected factors, the group of technological and economic factors is the most difficult. The main factors affecting the choice in connection with the highly developed software and technical capabilities of the presented instrumental systems, which allow the implementation of a wide range of didactic and functional opportunities in the form of java-application, flash-roller or VB-applications in the developed product - ease of learning and skill requirements, as well as purchase price and terms. J2SE products are distributed free of charge, but require high qualification.

The decisive factor in using instrumental systems as a tool for teaching information modeling in visual graphs and creating digital educational resources for visual graph models in the form of OMM is the initial familiarization of students with the instrumental system. In this case, it is appropriate to use Visual Basic, which is introduced in the computer science course (for example, [89]). This software can be used in laboratory work.

In addition, in order to understand the factors affecting the choice of software tools, it is important to determine the type of digital resource being developed and the methodological features to be implemented. It is necessary to take into account the development experience and specification of educational resources, including the leading organizations dealing with the problems of e-learning standardization.

Each of the above-mentioned instrumental development systems can be chosen as a design learning tool (to the extent that they use visual information modeling in graphs in the development of R&D) because it meets the requirements for educational tools. Instrumentation systems (Java2 SE SDK, Macromedia Flash MX), like other professional programs, meet the requirements for character-symbol tools, being a character-character model with its own language, conditional symbols.

- Conclusion and recommendations (Conclusion/Recommendations).

Thus, according to the above, Java2 SE SDK 5.0 and Macromedia Flash MX 6, 8 package (java-applet technology and flash technologies) are the main design tools for this methodological system within the framework of teaching information modeling in graphs visually. can be considered as The choice

of these technologies and software tools is not related to the simplicity of ODM implementation, but to the possibility of providing a high level of interactivity through programming languages, networking and visualization, in which object-oriented programming, programming language class libraries, specific knowledge in the field of user interface design is activated, applied and deepened. In conclusion, it should be said that a tutorial containing a module on the use of Java2 SE SDK and Macromedia Flash MX in teaching information modeling in visual graphs is presented [5].

References

1. Левитес, Д.Г. Практика обучения: современные образовательные технологии/ Книга для учителя / Д.Г. Левитес. - Мурманск, 1997. - 228 с.
2. Фомин, В.И. Развитие содержания подготовки к информационно-аналитической деятельности на основе семиотического подхода: автореф. дис. ... докт. пед. наук: 13.00.02 / Фомин Владимир Ильич. - Самара, 2009. - 52 с.
3. Щедровицкий, Г. и др. Педагогика и логика / Г. Щедровицкий и др. - М., 1993.-416с
4. Мезинов, В.Н. Введение в педагогическую деятельность: Учебное пособие / В.Н. Мезинов. - Елец: ЕГУ им. И.А. Бунина, 2005. - 91 с.
5. Лаврентьева, Н.Б. Педагогические основы разработки и внедрения модульной технологии обучения в высшей школе: автореф. дисс. ... докт. пед. наук: 13.00.08 / Лаврентьева Наталья Борисовна. - Барнаул, 1999. - 21 с.
6. Nekboyev Kh. Kh. Mechanizms of the influence of mass media on the development of personality under the conditions of media// European joutnal of Research and Reflection in Educational № 1, 2019. 53-55 pp.
7. Gayratovich, E.N. (2019). USING VISUAL PROGRAM TECHNOLOGY METHODS IN ENGINEERING EDUCATION. European Journal of Research and Reflection in Educational Sciences Vol, 7(10).
8. Gayratovich, E. N. (2021). SPECIFIC ASPECTS OF EDUCATIONAL MATERIAL DEMONSTRATION ON THE BASIS OF VISUAL TECHNOLOGIES. International Engineering Journal For Research & Development, 6, 3-3.
9. G'ayratovich, E. N. (2022). It Is A Modern Educational Model Based On The Integration Of Knowledge. Eurasian Scientific Herald, 5, 52-55.
10. G'ayratovich, E.N. (2022). The Theory of the Use of Cloud Technologies in the Implementation of Hierarchical Preparation of Engineers. Eurasian Research Bulletin, 7, 18-21.
11. Gayratovich, E.N., & Yuldashevna, T.O. (2020). Use of visualized electronic textbooks to increase the effectiveness of teaching foreign languages. European Journal of Research and Reflection in Educational Sciences Vol, 8, 12.
12. Ergashev, N. (2021). Methods of using visualized educational materials in teaching programming languages in technical universities. innovation in the modern education system.
13. Ergashev, N. (2020). Didactic fundamentals of electronic books visualization. An International Multidisciplinary Research Journal.
14. Ergashev, N. (2020). Using the capabilities of modern programming languages in solving problems of technical specialties. An International Multidisciplinary Research Journal.