

METHODOLOGY OF TEACHING INFORMATICS USING TELECOMMUNICATION TECHNOLOGIES

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Abstract. *In the article, based on the content of the individual subjects of the psychological-pedagogical, science-methodical blocks, and the modern requirements for the teacher in the field of information technology education, we discuss the issues of methodological and technological preparation of teachers in the field of information technology in the use of computer telecommunication technologies We have developed an experimental version of collective learning (special course "Basics of Internet Education").*

Keywords: *method, telecommunication, technology, basic, swot, union.*

In accordance with the specified tasks, based on the content of the individual subjects of the psychological-pedagogical, science-methodical blocks and the modern requirements for the teacher in the field of information technology education, we in the field of information technology "methodological and We have developed an experimental version of the subject of collective study of technological readiness (special course "Basics of Internet Education"). The uniqueness of this special course is that the modular structure of this course provides for the development of this subject. Any module within the special course learning it does not require the use of additional education, but can take the place of one of the parts of the basic psychological-pedagogical and methodical training of the teacher.

In determining the content of education: in the use of future computer and telecommunication teaching technologies, we relied on the principles of the professional and pedagogical direction of personnel training in this field proposed by M.V. Shvetsky.

1. The principle of fundamentality. Fundamental training of the teacher in the field of new information and telecommunication technologies of education is necessary.

2. The principle of binary, which is the combination of general scientific and methodical directions, is taken as a basis for the development of an information technology course at a teacher-training higher education institution.

3. The principle of the leading idea - should become the leading idea of the information technology course in the realization of connections between the courses of the higher education institution and the educational institution.

4. The principle of continuity. All courses related to information technologies should participate in the process of continuous perception of the elements of pedagogical activity of the student.

5. The principle of using new information technologies in the pedagogical activity of the teacher of higher educational institutions.

6. The principle of systematic use of new information technologies of education.

One of the most common ways to create a course model is the graphical approach. Thus, we get a hierarchical structure of learning objectives. Its peculiarity is that in order to achieve the goal of the highest level (the top of the tree), all individual goals of the lower level must be implemented in a certain order. Such training is based on traversing the resulting target tree.

Students of technological education were trained to use telecommunication technologies in the process of teaching computer science as follows: students' design and modeling competencies were formed as a result of the use of the "SWOT analysis" method in the lecture; as a result of using the "SYNDICATE" method in the laboratory, students' algorithmic and programming competencies were formed; as a result of using the "SMART" interactive educational method in independent education, students' technological, informational, automation competencies were developed. Training of future teachers of technological education in the use of telecommunication technologies in the forms of education, i.e. lecture, laboratory and independent education, was carried out in the following stages: 1. e-mail; 2. www global network; 3. Using the UseNet network; 4. file transfer, i.e. using the FTP system; 5. development and use of a database, use of telecommunication systems such as TelNet, WAIS.

The main objective of the proposed course is to provide students with the necessary knowledge, skills and abilities to develop and use a virtual educational web portal.

Based on this goal, we highlight the sub-goals of the first level course.

1. To introduce the didactic possibilities of the Internet and directions for the development of Internet education;
2. get acquainted with the types of online classes and the features of their conduct;
3. to study the methodology of creating Internet applications for conducting online classes;

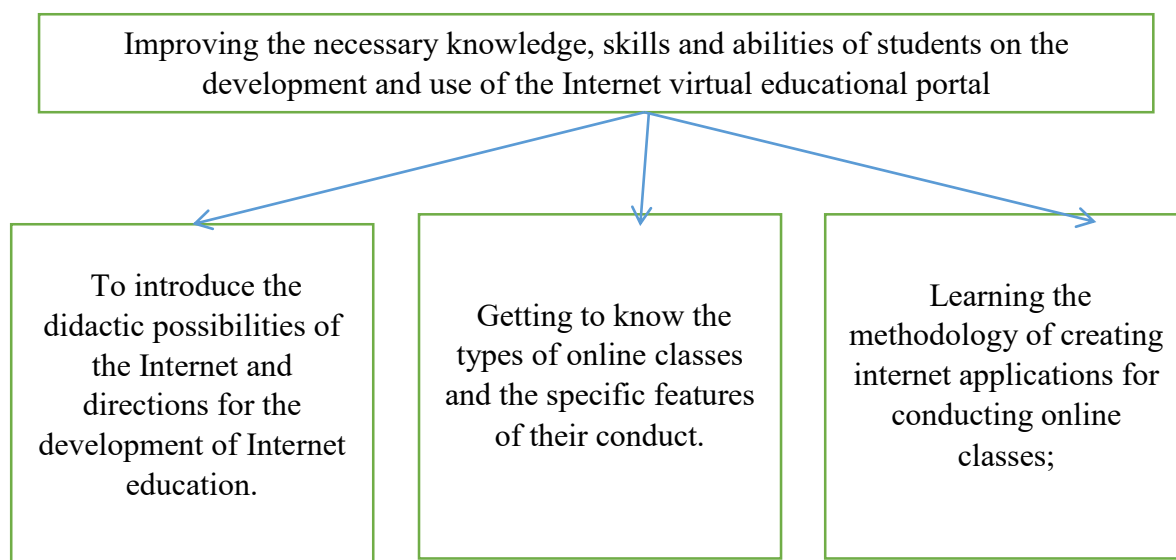


Figure 1. Sub-objectives of the first level course

Some defined sub-objectives of the first level will help provide more detail. We distinguish secondary sub-goals.

Sub-goal №1 is accomplished through familiarization:

1. Ways of using telecommunications in an educational institution.

2. The special role of telecommunication technologies in training students of an educational institution.

Sub-goal №2 is implemented through learning:

1. technology of organizing and conducting training through network cooperation. 2. workplace safety when working on the Internet.

Sub-goal №3 is implemented through learning:

2. funds necessary for the development of Internet applications.

2. Psychological features of creating internet applications for students of educational institutions.

3. features of creating internet applications for various forms of technological training of students.

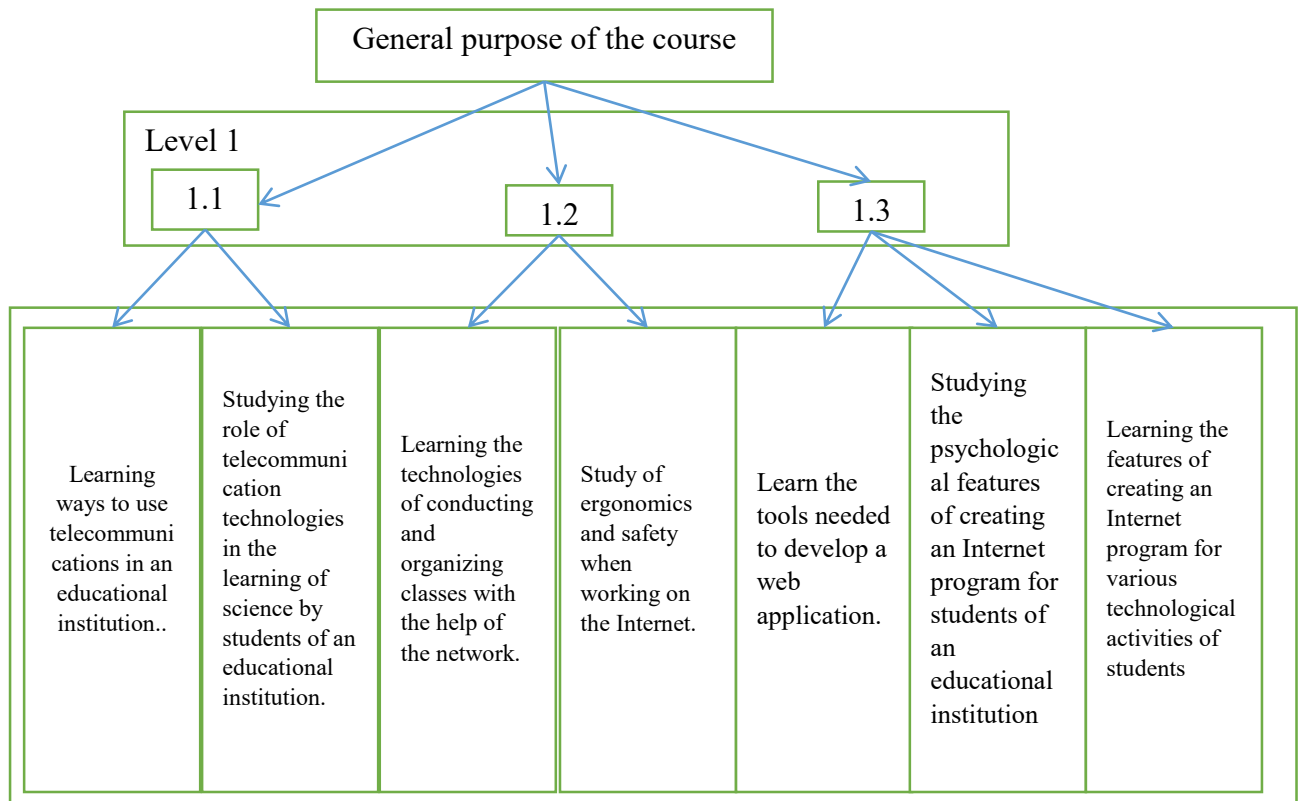


Figure 2. Secondary Objectives of the Second Level Course

Second-level sub-goals, in turn, are divided into the following, based on the funds necessary for the development of the telecommunication educational environment:

1. Learning the Java programming language gives great opportunities in the development of specialized Internet applications. In addition, this powerful and versatile programming language allows you to create generic applications for the Windows system and has a logical object model. This gives students the opportunity to reinforce and develop the skills and competencies acquired in the programming course, such as creating object-oriented programs and event-driven programs.

2. study of practical issues related to creating websites with Java applets in methodical content.

Let's consider the procedure for implementing the resulting goal tree.

Sub-objective No. 1 implies the implementation of secondary sub-objectives in sequence starting from 2.1 and ending with 2.2. It includes a review of the methods of using telecommunications in an educational institution and the role of telecommunications technologies in the preparation of students of an educational institution.

Sub-goal No. 2 envisages the sequential implementation of secondary sub-goals starting from 2.3 and ending with 2.4. Technologies for conducting and organizing training with network support, and issues of safety of training and workplace ergonomics when working on the Internet are considered.

Sub-goal No. 3 envisages the sequential implementation of secondary sub-goals starting from 2.5 and ending with 2.7. Implementation of sub-goal 2.5 involves familiarization with tools for

creating Internet resources such as Java. Sub-goal 2.6. psychological features of creating internet applications for students of an educational institution. Sub-goal 2.7. includes familiarization with the peculiarities of creating Internet applications for various forms of technological training of students

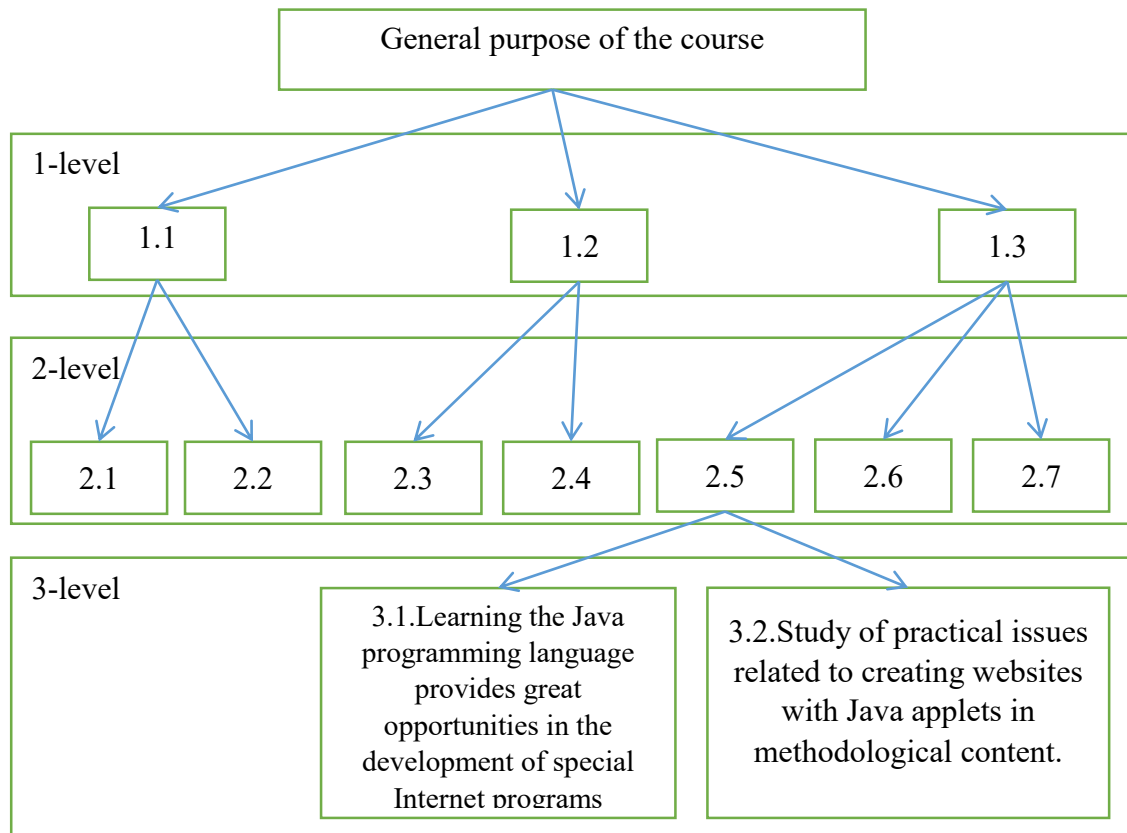


Figure 3. Secondary sub-goals

In turn, it is necessary to start with the third level sub-goals. Learning the Java programming language offers great opportunities in the development of specialized Internet applications. This allows students to form a more meaningful and deeper understanding of the purpose, capabilities and interaction of various tools for creating Web pages. This part of the course begins with the basic constructs of the Java language. Next, we will consider the object model, focusing on the specific features of this language. Then we'll look at how it works, how to structure an applet, and how to embed it in Web documents. We conclude this section with sample applets so that students can better understand how to use applets on web pages.

Then we move on to sub-goal 3.2. We consider Java applets from the point of view of using their capabilities in the Internet resources of the subject area, therefore familiarity with the Java language should provide a practical orientation of the created applets, for which a specific topic from the "Technology" course will be considered.

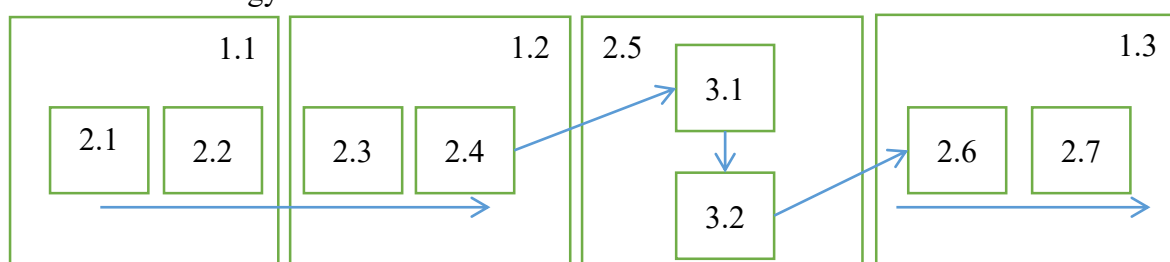


Figure 4. Course objectives implementation procedure

Thus, we get the procedure for the implementation of the goals presented in Figure 4.

Section 1 "Historical Aspects and Trends of Internet Use in Education" is devoted to the implementation of sub-objective 1.1 of the first level.

Section 2 "Fundamentals of network pedagogy" is dedicated to the implementation of sub-goal 1.2.

Section 3 "Using applets as executable elements of Web sites in Java" 1.3. dedicated to the realization of the lower goal. Each section contains the necessary theoretical material, examples of practical activities (case studies) and practical assignments. A cycle of laboratory work has been developed for this component of our course. This section focuses on the Microsoft Developer Studio J++ environment. It is an integrated Java programming environment that runs on the Windows operating system and allows you to create, modify, build, run, and debug applications in a single environment.

This is explained as follows:

1. It is a working environment under Windows and includes interface elements familiar to students from software products such as Word and Excel.

2. The environment allows you to automatically create skeletons of HTML documents and Java applets, which speeds up the process of creating Web sites, but does not relieve you of the need to know the basics of these languages.

3. The environment includes the visual creation of dialog boxes and menus, which are then translated into Java code by a special utility. This makes routine creation of these interface elements easier.

4. The environment has an extensive support service with comprehensive knowledge of the Java language.

5. The environment has convenient tools for working with the project being created, which allow you to quickly navigate through files and the internal content of Java classes.

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