

# Subject Information and Educational Environment as Means of Formation of Information and Communication Competence of Future Professionals

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*Abstract. Informatization and unprecedented advances in technology make it necessary to adapt the development of skills in the information society. At present, information and communication competence becomes an urgent need and a prerequisite for the success of future specialists, so it is necessary to increase the efficiency of work, to communicate, to access information and to receive services.*

*Information and communicative competence of a future expert is a complex formed by the individual qualities that provide flexibility and willingness to change; efficiency of professional work in the conditions of informatization of a modern society in order to acquire information and communicative competence.*

*Despite numerous studies of the problem connected with the formation of information and communication competence, the actual level of knowledge and skills of graduates of Russian schools in this area is quite low. Therefore the problem of the search tools to more effectively develop the information and communication competence of a future specialist is highly relevant.*

*Today information educational environment becomes one of the main means of training meeting the requirements of a competence approach. These features are provided by the didactic specificity of methodological support of educational environment, by shifting the emphasis from educational activity of the teacher to the use of active and interactive teaching methods, active and independent cognitive activity of students; orientation in learning not only to the result of training, but also the process of development of new information and applying it to produce results; giving students the freedom of choice of means of implementation of the training task.*

*Subject information and educational environment can be defined as an open educational system formed on the basis of information of educational resources, computer training facilities, modern means of communication, educational technology which is aimed at the formation of creative, intellectual and social development of the individual.*

*As the theoretical research and practical experience show, the subject e-learning environment in combination with active and interactive teaching methods, individual and group creative tasks in the context of future professional activity of a specialist is one of the leading factors in the formation of its information and communication competence.*

*The author describes in detail the stages of the electronic textbook development, as well as web quests in the teaching of philological sciences at the university, and enumerates a number of advantages of their use.*

*Keywords: Information educational environment, information and communication competence, competence approach, electronic textbook, web-quest.*

## I. INTRODUCTION

Informatization and unprecedented advances in technology make it necessary to adapt the development of skills in the information society. At present, information and communication competence becomes an urgent need and a prerequisite for the success of future specialists, so it is necessary to increase the efficiency of work, to communicate, to access information and to receive services.

Information and communicative competence of a future expert is a complex formed by the individual qualities that provide flexibility and willingness to change; efficiency of professional work in the

conditions of informatization of a modern society in order to acquire information and communicative competence.

The problem of formation of information-communication competence engaged A. Yu. Uvarov [8], E.A. Rakitina [5], A.L. Semenov [6], E.K. Henner [2], O. Shilov [7], M.B. Lebedev [7]. Despite numerous studies of the problem connected with the formation of information and communication competence, the actual level of knowledge and skills of graduates of Russian schools in this area is quite low. As practice shows test freshmen of the Faculty of preschool and primary education Arzamas branch

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of the Nizhny Novgorod State University, about 75% of the respondents do not own even a necessary level of computer literacy, not to mention the possibility of using information and communication technologies to solve creative problems, the ability to analyze information and its critical evaluation. Therefore the problem of the search tools to more effectively develop the information and communication competence of a future specialist is highly relevant.

The structure of the information-communication competence actively studied, but remains open. As an example, a list compiled by E.A. Rakitina [5, p. 5], including: expertise in the field of cognitive activity; competence in the field of communication activity; technological competence and expertise in the field of social activities.

These competencies can be taken as a basis of information and communication competence of pedagogical high school graduate, but, in our opinion, should be expanded and supplemented by professional and creative competence.

Under the professional and creative component of the information and communication competence we mean the willingness to solve the "creative" professional work tasks with the use of modern information technologies.

Go to the competence model of education, due to the demands of the modern labor market, it requires a qualitatively new methods and means of training to obtain the necessary educational outcomes.

Today one of the main means of training which meets the requirements of competence approach becomes informational educational environment. These features are provided by the didactic specificity of methodological support of the informational educational environment, by shifting the emphasis from teaching activity of the teacher on the use of active and interactive teaching methods, active and independent cognitive activity of students, orientation, learning not only the result of training, but also on the process of development of new information and its application to obtain a result of activities; Giving students the freedom of choice of means of implementation of the training task.

Subject information and educational environment can be defined as an open educational system formed on the basis of information of educational resources, computer training facilities, modern means of communication, educational technology, and aimed at the formation of creative, intellectual and social development of the individual [10].

As the theoretical research and practical experience, the subject e-learning environment in combination with active and interactive teaching methods, individual and group creative tasks in the context of future professional activity of a specialist is one of the leading factors in the formation of its information and communication competence.

## II. MATERIALS AND METHODS

Experience in the use of subject information and educational system for training under the program "Information and communication technologies in primary education" in Arzamas branch of the Nizhny Novgorod State University shows that the formation of information and communication competence becomes more efficient, if the structural component of the subject information and educational environment highlight its subsystem methodical maintenance [12]:

- Competence in the field of cognitive activity corresponds to a content object environment as a methodical complex on discipline, video tutorials, presentations, training methods used, monitoring diagnostic system formation and development of competencies;
- Competence in the field of communication activity - an interactive means of communication and exchange of information (forum, study group on social networks, means of communication and management of group work, joint development projects);
- Technological competence - created by the student personal information educational environment on the basis of the site (web portfolio) containing reports on assignments, research projects, links, knowledge of monitoring, the current status of the projects, analytical reviews, glossary, etc.);
- Competence in the field of social action - the integration of the subject of the information educational environment with higher levels of educational environment (university, region, all-Russian information and educational systems), social networking;
- Professional and creative competence matches substantive content of the information educational environment of complex problem situations, individual and group creative tasks, methods of creative learning.

Organized in this way objective information and educational environment through the construction allows individual learning path most effectively organize independent learning and creative activities in the context of the student's future professional activity with the use of modern information technologies and increase the level of development of its information and communication competence.

## III. RESULTS AND DISCUSSION

As a means of information-subject environment of high school multimedia and animation fragments of course can be used; sections of the self-test knowledge of students at all stages of the study course, containing different levels assignment with comments; sections of self-control, with the use of non-traditional forms of presentation of assignments (electronic crossword puzzles); structural

representation of a theoretical material - notes diagrams; problematic tasks, organized in the form of competitions; Development of sections of electronic textbooks, thematic web-quests.

The proposed method of the electronic textbook development, as well as web quests, will focus on a number of the benefits of their use. For the development of the electronic textbook, in particular its section, it is necessary to know what we're dealing with. Thus, the electronic textbook is a basic e-learning tools. This textbook contains all the basic materials needed for teacher training and conducting classes, as well as students to study educational topics [9].

When creating an electronic textbook, and in particular paragraph should be guided by the following principles: [4]

- Quantize;
- Completeness;
- Visualization;
- Inserted;
- Regulation;
- Adaptability;
- Computer support;
- Collection.

All these principles can be implemented easily using HTML language.

Language HTML - the standard markup language documents on the World Wide Web. It describes each element of the Web-document, using tags. Developed language, Timothy Berners-Lee in 1990.

Any HTML-document begins with the basic tags:

- <Html> - start tag of the document;
- <Head> - specifies where different information is placed, are not displayed in the body of the document;
- <Body> - defines the visible portion of the document.

When you create a section of the electronic textbook is primarily useful to this aspect of HTML, a text formatting.

With it, you can vary the size and font color, font, typeface, adjust the levels of headings, and more. It helps to realize the visualization of the principle of the electronic textbook.

This can be achieved using the tag <font> and the corresponding attributes to him:

- Color - sets the color of the text;
- Face - specifies the typeface;
- Size - sets the font size in units.

Do not forget about the color scheme of Web-pages. Setting colors produced in the tags <body>, <font>, <hr>, <table> [4].

HTML allows you to set a specific background color, or use a certain background image:

- <Body>
  - Background - sets the background image on a web page;

- Bgcolor - the background color of the web page.

The electronic textbooks is of particular importance graphical representation of data, which makes it easier to understand and remember new concepts statements.

Working with graphics in HTML is not difficult:

<Imgsrc = "name"> - add images to HTML-document.

This tag can be supplemented with:

- < "?" Imgsrc = "name" align => - aligns the image to one of the sides of the document (left, right, center; bottom, top, middle);
- < "?" Imgsrc = "name" border => - sets the thickness of the border around the image;
- <Imgsrc = "name" alt = "?"> - A tooltip when you hover over the image [4].

Implement branching Web-page by using the principle of frames.

Frames allow you to open a browser window in several documents. And if they are used, there is no tag <body>.

<Frameset>

- Cols =? - Specifies the number of vertical frames;
- Rows =? - Sets the number of horizontal frames;
- Frameborder = yes / no- presence / absence of borders between frames;

branch principle can not be implemented without the hypertext links.

The idea of hypertext technology belongs Veniveru Bush.

Hyperlink text or graphic object that contains a connection to other texts, graphics, telematics and digital information.

<a href="URL"> tags hyperlinks

- Vlink- color already visited hyperlink;
- Alink- color of active links.

Task "Create electronic textbook section using the HTML language» could serve two purposes - to study the basic principles of the electronic textbook and consolidate the basic knowledge of the language HTML.

The use of e-learning to a certain extent can make up for gaps in knowledge, and easy to use, and many well-known HTML will help to realize this kind of learning tool.

Creating computer-assisted learning will make sense only if you improve the efficiency of teaching and learning activities as a result of the opportunities of computer presentation. From this it follows, to ensure the effectiveness of the educational process automated training complex has to be radically different from the textbooks.

Thus, the use of computer technology in the formation leads to a change in the teaching process.

If we want that information was easily mastered, it should be duly represented, namely - was evident.

One such method is the web quest. And we think of a reason, after all, this way of presenting information, a lot of pluses. It allows you to save resources for the purchase of a large number of books on a given topic, to get the necessary knowledge in a shorter period of time, as well as to organize an interesting and effective work in groups.

In addition, while the students will be able to express themselves creatively. But most importantly - an effective memorization and not monotonous repetition.

Technology Web quest known enough. In 1995 she was introduced to Bernie Dodge, professor at the University of San Diego, so to say that it is new, it would be wrong. While in Russia for training it is practiced recently [10].

One of the main web-quest tasks - development of user skills working with various Internet services, and computer. To create such products as the best suited language HTML.

The language is easy to use, can be embedded in the text document image, HTML-document can be read on a computer with any browser.

The relevance of the technology is that it can introduce new services, with all this, provide training on specific topics.

Any Web quest simply arranged: it is always present administration, formulated the task, and then describes how to do the work and at the end, in some cases there is a test for self-examination, which in turn is useful for testing knowledge gained. It can be divided into groups. Conveniently divided into groups, which further contributes to a better assimilation of the material, through the exchange of ideas, each of the participants.

As to how to implement the training, development or creation via Web quest. Today it is not difficult. On the Internet a lot of services with the prepared forms, there are many online designers to create Web-quest. In their arsenal there are the required number of tools for fast and easy operation. Do not too difficult to put a picture (video) or make reference to third-party sources, and insert a table for your convenience.

Web-quests are well established for the study of the nature of the review that is not required to strictly follow a specific sequence of study material.

In the study, each group of students working with a relatively small amount of information, which is artificially restricted to allow the team to meet the tight time frame short web-quest [11].

The quest options students are invited to explore the following topics:

1. WorldWideWeb - the World Wide Web:
  - Hypertext
  - Hypermedia
  - HTTP
  - WWW-pages
2. Electronic mail:

- Mail server
- Scheme of operation of e-mail
- FTP file transfer 3.Sluzhba
- File Transfer Protocol
- Appointment of the FTP-server
- 4. Cistema Usenet newsgroups
- NNTP (Network News Transfer Protocol)
- Groups newsgroup
- 5. Complete the online service:
  - On-Line translators and dictionaries
  - Internet Shopping
  - Systems Electronic payments
- 6. Remote access to computers Service:
  - Telnet
  - Functions of the client program
  - Functions server program

To estimate does not slow down the process of listening, discussing, we are somewhat simplified evaluation system. It was decided to move away from the classical table, where painted various criteria.

Students are encouraged to take into account the quality and design of the product of the level of the report by using the integrated 10-point evaluation.

The Audit Committee is chosen by students and consists of students.

By the way, when the results of the secret ballot (scores exhibited by all participants anonymous) are ready, there is their announcement. At the same time voiced not the entire table, and called numbers of the two teams, the winners, the names of the authors of the two best projects [3].

In assessing the work and performances of his bandmates often personal likes and dislikes to the student transferred to the assessment of his work. Especially subjectivity characterized by first-year students. Participation of third-party neutral people, no doubt, adds objectivity [4].

Create Web-quest alone does not constitute a special hardship.

#### IV. CONCLUSION

Thus, objective information and educational environment through the construction allows individual learning path most effectively organize independent learning and creative activities in the context of the student's future professional activity with the use of modern information technologies and increase the level of development of its information and communication competence.

Education in the information-subject environment - is not only new information and the development of modern methods of learning activities. It's the intellectual development, mastery of other types of thinking, expression of ideas with new tools. In the recent past, the introduction of information and communication technologies in the training task was the development of logical and algorithmic thinking of students (for example, when teaching computer science). Now, however, the

limitations of this problem became apparent, because the computer can be a good teaching assistant in the development of figurative, verbal, intuitive thinking and other mental activity. Students using the information-educational environment better structure the information, can operate with larger blocks of information, confidently classify the content of the subject area on the identified criteria, properly set cause-effect relationships, adequate domain systematize objects specifics. When using information and educational environment in the process of learning the subject can also be successfully develop students' critical personal qualities: creativity, reflexivity, criticality, responsibility, self-reliance. The condition for this are the specially organized system of methodical and purposeful training of students to new activities in the information-educational environment [1].

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