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TEACHER INTERACTIVE EDUCATIONAL CONTENT
DESIGNING

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Abstract

A modern educational process requires system development and modernization of information resources. A special attention is paid to the designing of electronic educational content that will help to organize the basic and additional educational process in educational institutions. Designing of the electronic educational content requires: for teachers of educational institutions to be ready to design the content and apply it in the educational process; the content should meet the didactic, physiological, health standards; the content should be introduced to the learning environment of an educational institution and provide all the participants of the educational process with direct access to it; the content should improve the quality of the educational process through the active use of interactive exercises; intermediate knowledge assessment and prompt access to educational and library resources. Development of interactive educational content in contrast to traditional and traditional and active content requires extra knowledge and communicative skills. However, as practice shows such competence is poorly developed with almost every teacher of educational institutions with the exception of computer science and math teachers. That is why teachers of educational institutions should take a refresher course on design and development of electronic educational content. This course will help them to acquire special competence in content designing and teach them how to apply the content in the educational process. Teachers will also create the electronic educational content on the subject they teach. This course will help to create a high-quality interactive educational content and will improve teacher's knowledge and communicative skills.

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1. Introduction

One of the main pedagogical priorities is to introduce an e-education in the school system. Today the program on development of e-education is being implemented on the federal level. Vladimir Putin, the President of the Russian Federation, in his speech at the State Council meeting on improving the system of general education noted that with a high-quality Internet access distance education and widespread use of electronic educational resources become more effective, though we still do not have enough high-quality electronic educational resources. The problem is also being dealt with at the regional level. In particular, the program on Promotion of E-education in Educational Institutions of the Republic of Bashkortostan under the Government Decree of the Republic of Bashkortostan No. 368 dated September 10, 2015, On Approval of the Electronic Education Development Concept in the Republic of Bashkortostan for the period of 2015-2020 (Postanovlenie..., 2015) is being implemented.

2. Problem Statement

Today the development of innovative, high-quality and effective electronic educational resources is one of the main tasks of e-education promotion. The e-resources progress has made it possible to replace text, analogue, video and audio resources with interactive and multimedia electronic educational resources. There is a significant change in the standard of the electronic educational resources and their application in the educational process. Information and learning resources become an essential part of educational environment (Zaitseva, 2016).

In the process of creating the information and learning resources database a special attention is paid to the design and development of electronic educational content. For now though, there is no unified standard for content design.

Teachers can either design the content themselves or use the electronic content freely available on the Internet. And while the process of creating electronic educational products does not cause a problem for a computer science teacher, teachers in other subjects with no IT-qualifications may experience a certain difficulty. The significant problem is that in both cases the content used in teaching practice does not always meet didactic, technological, psychological requirements, sanitary and epidemiological standards.

The comprehensive analysis of the educational, personnel, material and technical resources of educational institutions allow us to conclude that the designing of electronic educational content and its application in the educational environment faces the following problems: insufficient technical and technological base, lack of high-quality software and licensed programs, lack of teacher's competence in designing the electronic educational products and using the distance learning technologies.

The solution to this problem is to formulate the requirements for the designing of electronic educational content and its application in the electronic educational process. When creating electronic educational content, one should take the following general requirements into account:

- general didactic principles of the teaching material design;
- psycho-physiological aspect of information perception;
- ergonomic requirements for the information presentation;
- sanitation and hygiene.

3. Research Questions

It is necessary to take into account the specific requirements for the design and application of educational content in e-learning process and distance learning technologies. This product should include a lot of interactive elements. Thus, electronic educational content can be subdivided into several types according to the amount of content information, the degree of its interactivity, the degree of student involvement. The simplest type of interactive content is a *traditional content*. It is based on one-way "student-educational content" interaction. The content has small interactive material database and, accordingly, implies the traditional form of working in it. The content includes tasks on reading, graphic video and audio materials.

Next type of electronic educational content is *traditional and active content*. It is based on a model of an active "student -educational content" interaction through basic, certain commands. Traditional and active content includes: viewing three-dimensional objects with a computer mouse and keyboard, clicking on hyperlinks, interactive scrolling of materials, zooming and shrinking of images, etc. The most innovative type of educational content is the *interactive content* (Badanov & Smolina, 2017). Its main feature is the interactive dialogue mode that allows students "to communicate" with the educational content through information and communicative technologies on the topics within the curriculum allowing for possible changes in the study plan. Interactive content is different from traditional and traditional and active content as it gives much freedom to a student when working in the electronic content. The content includes interactive classes with timed points for intermediate knowledge check, individual work tasks when a student must give a detailed written answer, matching tasks, interactive trainings that imply student's individual work on a search of learning materials. The interactive content not only standardizes the educational process but also teaches students how to work on a computer and peripheral devices. The interactive content combines the features of traditional and traditional and active content (Karpenko, 2008).

The designing of the above types of content (traditional, traditional and active, interactive) requires teacher's special training. The most effective way to solve this problem is to complete a refresher course for school teachers. For this purpose, Teacher Electronic Educational Content Designing refresher course was created and tested within the E-education Development Program of the Republic of Bashkortostan. 105 teachers from 23 general educational institutions have successfully completed this course. The analysis of the refresher course conclusions (figure 01), revealed that the higher the degree of content interactivity, the more time is required to design it.

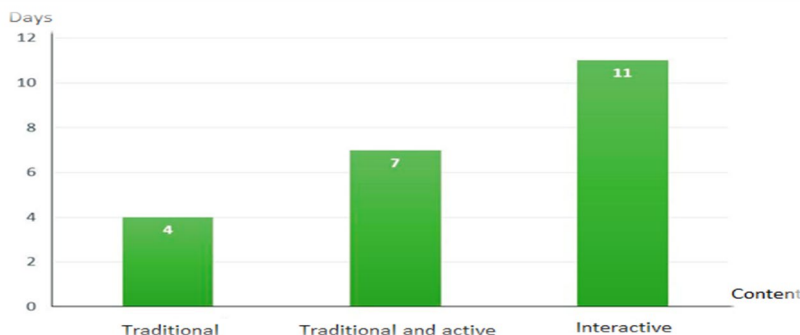


Figure 01. Educational content designing

The designing of electronic educational content takes a certain amount of time, depending on the level of teacher's knowledge and communicative skills. The study has shown that it takes the least amount of time with computer science and math teachers. And conversely, it takes the most amount of time with Russian language and literature teachers. Thus, we can conclude that content designing takes less time with science teachers, whereas arts teachers spend the most amount of time working on it (Figure 02). The tendency can be explained with the different level of IC-competence obtained during college and university years and general education institution teaching activity.

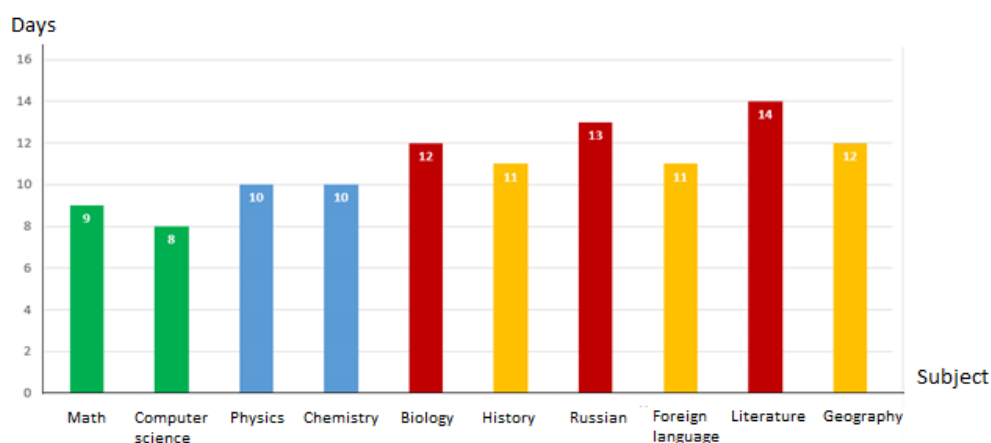


Figure 02. Designing of interactive educational content by teachers of different subjects

4. Purpose of the Study

This paper is aimed at designing interactive educational content by teachers of educational institutions.

5. Research Methods

During the study the following methods were used:

- theoretical: analysis of scientific and pedagogical literature, systematic approach;
- empirical: monitoring, description, comparison, survey and experiment.

6. Findings

Upon refresher course completion teachers have acquired competence in designing of interactive electronic educational content for the main and extracurricular educational activities. According to the degree of content interactivity it can be subdivided into (Galikhanov, Sergienko, & Sergienko, 2018):

-Traditional content, which includes:

Summary. E-learning product that contains brief information on the topic, purpose and aims of the lesson.

Text and graphic materials. E-learning product represented in text and graphic form that includes information on a new topic, individual work and revision materials.

List of recommended literature. E-learning product which includes a list of references, recommended and teaching materials (books, works, articles, laws and regulations, etc.)

Dictionary/glossary. E-learning product that is represented in a form of a list of terms arranged in alphabetical order. It can also be represented in tabular form.

Traditional and active content, which includes:

Video product. E-learning product that contains information on new topic represented in form of videos, video conferencing records, educational videos, laboratory work records etc. When recording video materials, it is necessary to take into account student's psycho-physiological characteristics, i.e the video material must be logically complete and no longer than 15 minutes.

Practical activity. Practical tasks for group and individual work in a form of essays, reports, workbooks, project work, creative assignments, etc. This electronic educational product does not have automatic work check feature which means that student works are assessed by the teacher.

Interactive content, which includes:

Slide-show lesson. This type of e-educational product can be used both as an additional and self-study material. Slide-show lesson consists of units with theoretical material and unit tests. Once the student has learned the theoretical material of the unit and passed the test they can move on to the next unit. If the student fails the test, they will be automatically returned to the previous unit, where they will be asked to review the theoretical material once again. Once the student passes the last test, the Slide-show lesson is considered completed and according to the unit test results the program automatically calculates the student's final grade.

Online test. E-learning product which is a set of tasks used to assess how well the student has learned the material. It comprises all types of tests and is subdivided into multiple-choice tests, tests that require a written answer, matching tasks, sequence tasks.

Self-training. E-learning product that is represented in a test form. It is based on active learning method with knowledge self-assessment. Unlike an online test, self-training test, in case of a wrong answer, offers the theoretical material for a student to revise and moves on to the next question once the answer is correct. Theoretical material can be represented both in text and graphic form, as well as in audio and video form.

Training simulator. E-learning product that allows a student to simulate different situations to practice various skills and competence. Simulators can include tips, prompting questions. The student can also revise one or several tasks of a certain level of difficulty.

7. Conclusion

The developed interactive educational content is being successfully applied in the educational process in general educational institutions. It is used as an addition to the traditional educational program, for an individual work, to organize extracurricular activities of a group activity clubs using e-learning and distance learning technologies.

Designing of the interactive educational content is an integral part of the modern educational process. Teachers need to have special training course to be able to design an electronic content and apply it in the e-education process. Interactive educational content develops and complements the information

and educational environment of a general educational institution, increases the effectiveness and quality of the learning process, makes it more flexible and varied, promotes a bimodal learning system.

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