

MULTIMEDIA AND HYPERMEDIA TOOLS IN KNOWLEDGE PRESENTATION AND ANALYSIS

Abstract: The paper presents the role of multimedia and hypermedia tools in the presentation and evaluation of an individual's knowledge. A few online technologies have been explored to enable the preparation and implementation of test type resources. It is proposed to authorise a web application to create multimedia tests, to evaluate and analyse knowledge. Here are some of the capabilities of the web app through which they can develop evaluation or self-evaluation tests. Here are some screenshots that visualize the main features of the application.

Keywords: Multimedia content, quality, evaluation, education, learning.

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Introduction

The high pace with which communication technologies develop and the superb capabilities they provide contribute to their widespread use and application in various areas of life, including education. It is without a doubt, necessary to follow these innovations, so that they can prepare people to cope with the needs of the modern world. In education, a variety of forms of teaching and assessment are applied. But time demands the implementation of a fundamentally new learning strategy, which is a prerequisite for the personal development of innovators and creative teachers and students. In the process of preparation using information technology, knowledge is collected in a different way - more stable and of high quality. Teachers solve a variety of problems that cover more practical examples, related not only to the motor system, but also to a good visual representation of the processes.

In many studies related to the implementation of Information and Communication Technologies (ICT) in learning [7, 8], authors note their positive influence in the process of learning and consolidating knowledge and skills. Today, ways to present information are increasingly sought, possibly in the most accessible form, and through "interactive educational multimedia" [1]. The main characteristic of multimedia solutions is the opportunity for instructiveness they provide. This is essential for efficient and effective teaching and assessment.

With the proposed software, we tried to separate the most commonly used descriptive statistics and graphical presentation of the results. The interface is easy to use, makes it possible to create new polls and is suitable for working with different kinds of questions. The processing is done via PHP and the data is stored in MySQL database.

Exposition

Increasing integration of multimedia into education requires the need to look for ways and technologies for presenting knowledge and analysing it. Some authors, noted in their research, improvements in the results of assessment tests, in which different multimedia elements were applied [2, 4]. In this way, the influence of different media such as text, sound, video and images [3] on human cognitive activity is studied.

Some of the modern teaching methods, such as e-learning, are associated with the presentation of learning content through a variety of multimedia components [6] to illustrate and support a better

quality of learning. Apart from the curriculum, an important focus of the training is also on the possibilities for self-control and "verification and evaluation of knowledge and skills through various electronic media" [5].

Testing with modern ICT allows them to be in electronic form that can be edited or modified quickly and easily according to the user's needs. There are some popular apps that allow for assessment resources to be created. Depending on their capabilities, they offer users access to their own database with questions, visual tempo, adding multimedia resources, aggregated or personal statistics (see Figures 1 and 2). These online tools, in order to be easily accessible for work, have a set of pre-modeled types of questions that makes them preferred. Based on the specifics of the platform, they may also have their limitations. The more common ones are the limitation of the number of questions, the number of tests, the export of the test in offline mode, the impossibility of publishing some types of multimedia files.

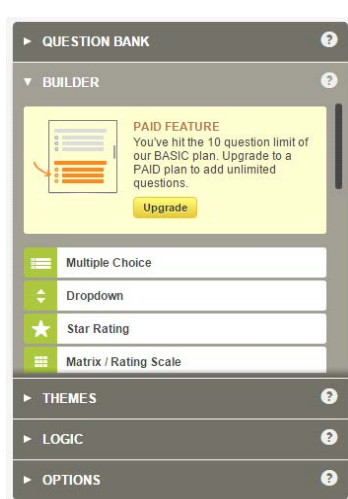


Figure 1: An example of compiling a survey by SurveyMonkey

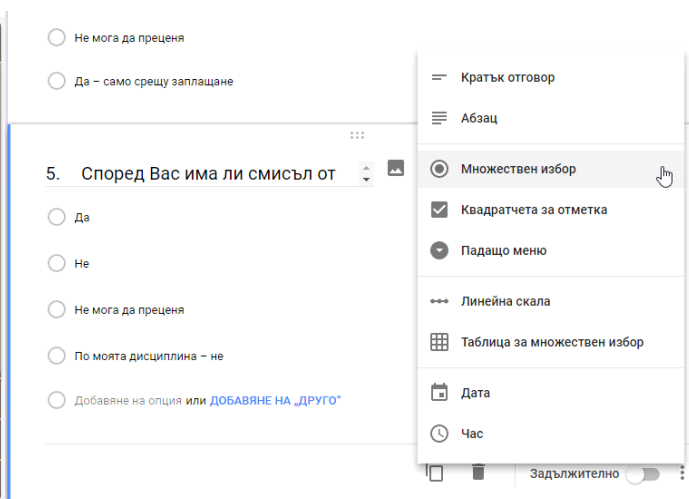


Figure 2: An example of compiling a test by Google forms

This article offers an authoring web application designed for multimedia and hypermedia presentation of knowledge and their analysis, using the most up-to-date languages used in web design and web programming.

HTML 5 and CSS 3 are used to visualize the interface, making it easy for applications to be accessed by mobile devices as well. The base storing the test units and user data is MySQL type. This is one of the most popular databases that organizes data in tables and allows quick access to information in tables. The functional part of the application is implemented through the PHP language, a scripting language widely used and preferred for dynamic content applications.

The proposed web app has two basic levels: a user level, which is used to assess the knowledge and an administrative level for managing the tests and visualising any statistics.

Creating an evaluation test begins with several preparatory actions that include a category to which the questions and the issues themselves will be associated. Each question that is introduced determines to which category it belongs, and through the web editor TinyMce, the text part of the questions could be formatted at the character level, similar to a text editor. An integrated video (for example, from youtube.com) can be given to the questions when needed. The final step is to enter the

correct and wrong answers (see Figure 3), providing two options: text or image. Their selection is visualized by javascript, changing the type, names, and value of the fields.

Figure 3 :Example of introducing a question and its multimedia

Attached at this stage, it supports four types of questions: True / False, Multiple Choice, Fill in the Missed Word, Match Answers.

After introducing the bank with questions to a particular category, the questions that will be involved in generating the new test should be identified. From **the Tests** menu, all currently introduced categories are visible. When specifying a desired category and choosing **the Generate** button, all the questions entered are displayed. With bookmarks set the number and choice of questions to participate in the new test, and **the Duration** field sets the time for the evaluation to appear.

Figure 4 : Example for selecting questions to generate the test

When composing more than one test, it is also possible to determine which of the user-generated tests is currently active (see). And if the test needs to be printed, an instrument is in the form of a pdf icon to download the generated test in PDF format.

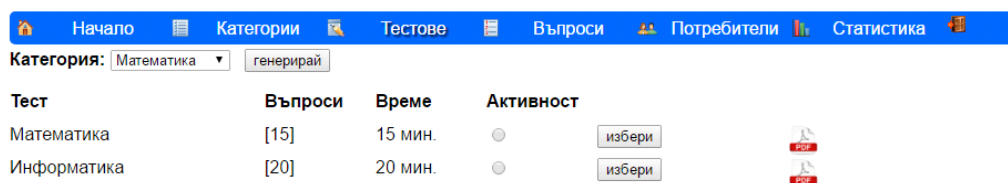


Figure 5 : Example of determining an active test or downloading it in pdf

The last option provided in the application is in the **Statistics** menu. Here you will see statistics for the active test, reflecting all the answers in percentage. For better visualization, a color chart reflecting the percentage of responses is placed on each question.

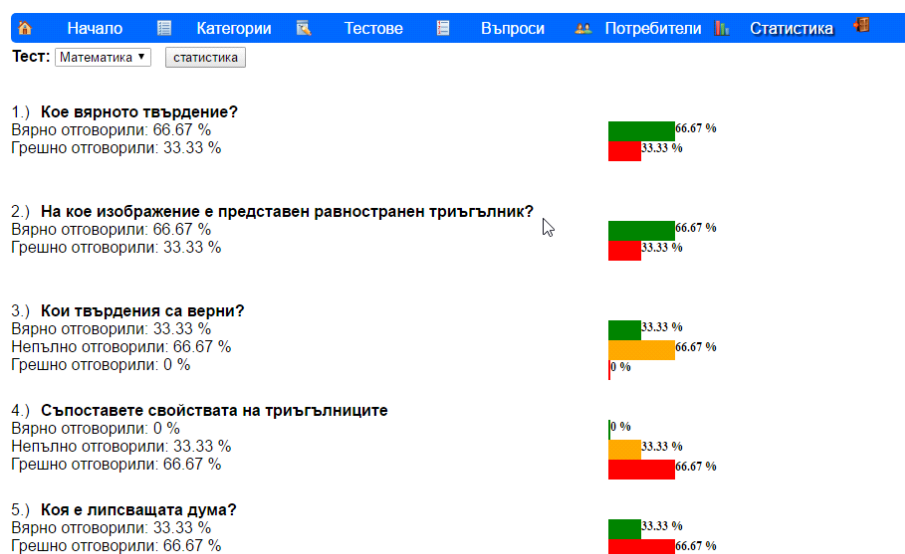


Figure 6: Example of visualization of specified answers

What next. At the moment, the app develops, with new opportunities to develop its functional capabilities. It is envisaged to develop new models of questions, a perennial assessment of the results obtained, an opportunity to build the user interface in multilingual form.

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