

TECHNOLOGY OF CREATION OF INTERACTIVE ELECTRONIC POSTERS FOR THE STUDY OF MATHEMATICS FORMULAS

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Abstract

In the article the authors describe the process of creating electronic mathematics tutorial for students of general education and students of higher education. Online guide «Formulas» contains interactive electronic posters. Feature of this manual is an opportunity to use one of the effects of interactivity - ability to close and open records at the right time for the teacher or student. This interactivity effect is the result of our own design technology Adobe Flash environment developed by the authors using the Action Script 2.0 programming language. The authors of the article detail the process of creation an online tutorial in Adobe Flash environment using the Action Script 2.0 programming language.

Using Action Script 2.0 provides effective management an online educational resource and enables implementation the specified effect when working with this electronic resource.

Keywords: *formulas, mathematics, interactive poster, effects interactivity, Adobe Flash, Action Script 2.0.*

1. Introduction

Interactive posters are of great importance in learning the disciplines. The main pedagogical idea of using interactive poster as an educational resource, is that it allows to formulate key concepts from the knowledge seekers with the help of visual demonstrations on the other hand and allows the teacher to manage the information on a lesson or lecture on the other hand. The training tools in this format will allow to increase mastering of new material by pupils and students [1].

Interactive electronic posters allow you to visualize the training time. Visual training material is didactic mean by which the content of educational material is presented in a structured aesthetically organized visual form. This didactic mean provides an effective flow of psychological processes of perception, allows you to implement basic didactic principles, promotes achievement pedagogical goals of learning and development [2].

Interactivity is a broad-based concept used by modern science reveals the nature and degree of interaction between objects. It is used to describe how active interaction between teacher, student and teaching material in methodology [3].

The word "interactive" is borrowed from English (interact - cooperate with someone or something) and means the ability of interacting parties to influence each other, be in dialogue mode.

Interest to us is one of the types of interactivity highlighted by Titova S. Feedback interactivity provides the ability to ask and receive a question or answer to control the process of assimilation of the material.

The teacher decides for himself what material and at what moment student should see. To do this, there are images by which this effect is carried out. You can open and close records with the help of such images and custom buttons[5; 6].

Formation of professional qualities of future specialists should begin with the first year of study at a higher education institution and apply to all subjects. A special role belongs mathematics.

Mathematics is not only a powerful means of solving applied problems and the universal language of science, but also is an element of a general culture. Therefore, mathematical education is an important component professional training of specialists in all industries [7].

2. The results of the research.

An online tutorial was created using System Adobe Flash CS3. This system has its own languages programming of Action Script 2.0 and Action Script 3.0. To create electronic educational resources make better use of the programming language Action Script 2.0. The online guide consists of a titular electronic page (Fig. 1) and pages with formulas.

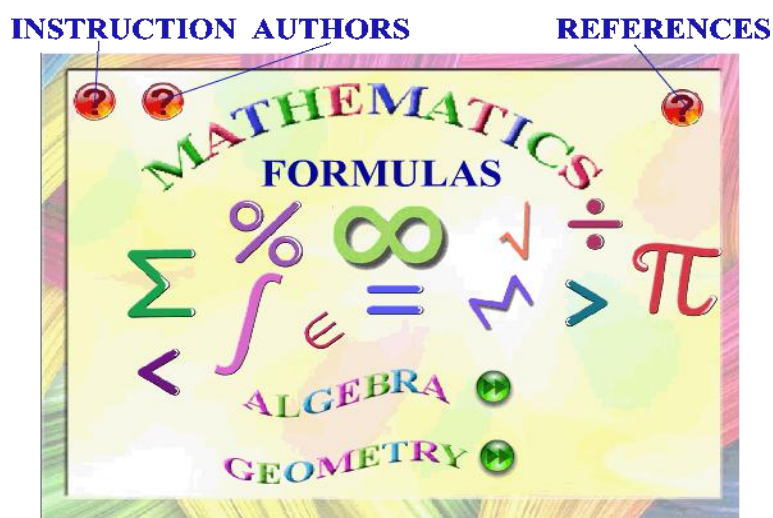


Fig. 1. Cover page image

The title page contains the available buttons: to go to the «Instructions», «Links», «Authors». On the same page there are green buttons with which can be accessed on the Algebra and Geometry web pages (Fig. 2).

First you need to highlight the cover of the front page and in the Actions field enter the command:
stop();

You must enter the code for a button that navigates to an email page «Algebra»:

```
on (release) {
goto And stop ("ALGEBRA")
}
```

You must enter the code for a button that navigates to an email page «Geometry»:

```
on (release) {
gotoAndstop («GEOMETRY»)
}
```

The name of the frame is written in parentheses. It should be noted that the title we can come up with it ourselves. The main thing is that it coincides with a name that is written in the parentheses of the code. The code provides the transition to the required web page. The «Algebra» and «Geometry» web pages (Fig. 2) are available choose the topic you want with formulas.

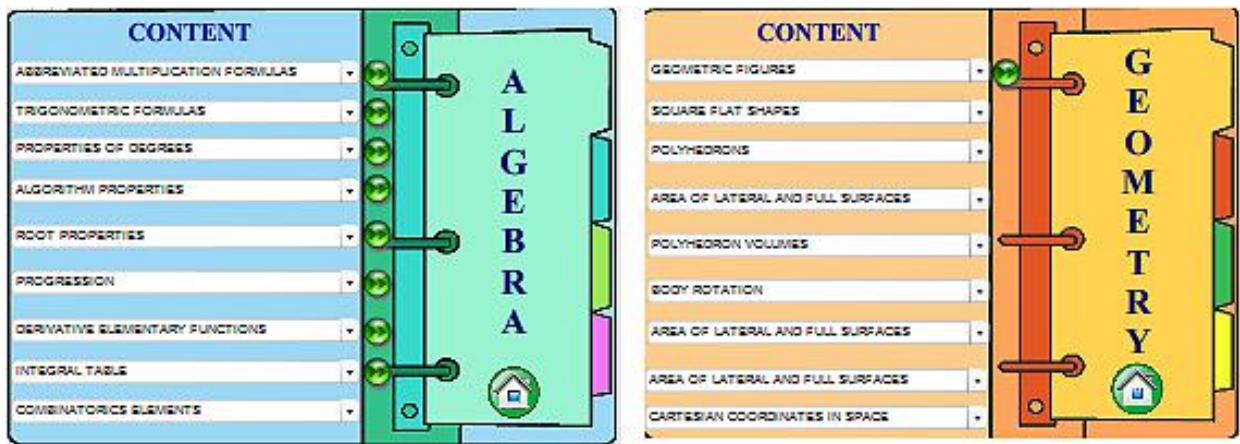


Fig. 2. Picture of web pages to select a specific topic in algebra or geometry.

For example, on the «Content page», select "Trigonometric formulas".

This guide uses a Combo Box item that can be placed in using the command: Windows / Components / Combo Box.

This is handy when you want to place many different topics. But using a Combo element Box is not essential in e-learning guides. The author can write content at your own discretion. In this case, select the topic "Trigonometric identities" and press the green button, which is located to the right near the inscription "Trigonometric identities" (Fig. 3).



Fig. 3. Picture of web pages to select a specific topic in algebra or geometry.

For example, on the «Content page», select "Trigonometric formulas".

This guide uses a Combo Box item that can be placed in using the command: Windows / Components / Combo Box.

This is handy when you want to place many different topics. But using a Combo element Box is not essential in e-learning guides. The author can write content at your own discretion. In this case, select the topic "Trigonometric identities" and press the green button, which is located to the right near the inscription "Trigonometric identities" (Fig. 3).

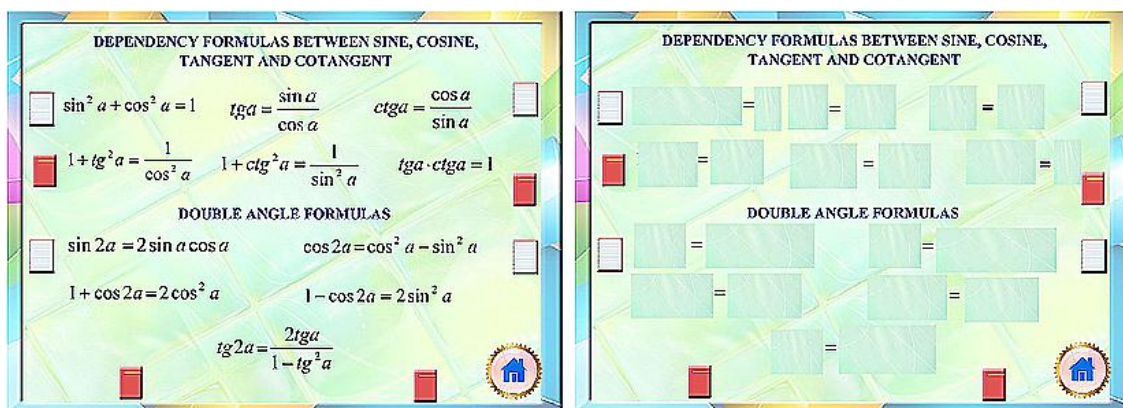


Fig. 4. Demonstration of the ability to close records.

This gives the teacher the ability to repeat formulas when the left side of the formula is known, and you need to remember the right part. Another option is when a student sees the right part of the formula, but you have to remember the left one (Fig. 5). If the user presses left mouse button on an image that closes a particular recording, then the image (blue rectangle) becomes invisible and the record visible (Fig. 5). Thus, a student can work independently. And in this way the teacher checks the knowledge of formulas.



Fig. 5. Image of the web page in the process.

We will describe the process of creating such a web page. First, you need to fill out the website with the necessary content. Trace create the necessary formulas, button pictures, formulas that close the formulas. Each image that closes the record must be converted to a Movie clip. Press F8 and the select Movie clip. We name each Movie clip, in the Properties field. They must all be different. For example: c1, c2, c3 ...

We convert all images of books in red and white (individually) to buttons. To do this, select the desired image, press F8 and select button and press OK. In this case, the name of the buttons is not need to in the Properties field.

Highlight the red button on the left side of the webpage, open Actions and enter the code:

```
on (release) {
_root.31._visible=100;
_root.32._visible=100;
_root.33._visible=100;
_root.34._visible=100;
_root.35._visible=100;
_root.36._visible=100;
}
```

This command makes all the images (blue rectangles) visible. Thus the rectangles close all records. Highlight the white button on the left side of the webpage, open Actions and enter the code:

```
on (release) {
_root.31._visible=0;
_root.32._visible=0;
_root.33._visible=0;
_root.34._visible=0;
_root.35._visible=0;
_root.36._visible=0;
}
```

This command renders all images (blue rectangles) invisible. So it open all the records. To make this image disappear and the user can see record, select it and enter the following code in the Actions field:

```
onClipEvent (load) {
this._visible = false; }
on (release) {
_root.31._visible=0;
}
```

There is a button on the right side of the page with a picture of a house. It is programmed to go to content with formulas in algebra:

```
on (release) {
gotoAndStop ("ALGEBRA")
}
```

Similar work is being done to create the second part of the manual. This is a study formulas in geometry (Fig. 6). Images that close records, have a different color - light-brown.



Fig. 6. Image of the web page of the "Geometry" section in the process.

The geometric interactive electronic posters are designed so that the teacher can freely close and open geometric shapes and formulas.

The process of creating a section of "Geometry" is the same as the process of creating a section "Algebra".

At the end of the work you need to select File / Publish Settings ..., check the box next to Windows Projector (.exe).

3. Conclusion

As you know, without the knowledge of formulas a student of a higher education institution does not be able to solve this or that example or problem not only in mathematics but also in other items. Tutorial "Mathematics. Formulas" was created to provide assisting pupils and students in learning formulas in mathematics. This is electronic Tutorial is a new format learning tool. Its peculiarity is its ability open or close the corresponding entries. This kind of interactivity allows students to work independently. And allows the teacher to adjust and control the level mastering of educational material. Interactive electronic posters have almost completely supplanted printing posters with educational process of modern educational institutions. It is proved that use interactive posters as demonstration learning tools are more effective than electronic posters. There is no doubt that the share of use interactive electronic posters will grow all the time.

The results of the research can serve as a basis for further research problems of designing interactive electronic posters. We consider promising research on software tools for teachers to create interactive ones electronic posters from different disciplines.

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