ACADEMICIA
An International Multidisciplinary Research Journal
(Double Blind Refereed & Peer Reviewed Journal)

DOI: 10.5958/2249-7137.2021.01095.8

ABOUT THE ONE METHOD OF CREATION OF ELECTRONIC TEXTBOOKS

R. Raxmonkulov*; K.K. Toshtemirov; G.A. Toshtemirov*****

[1,3]Almalyk Branch of Tashkent State Technical University named after Islam Karimov, UZBEKISTAN

ABSTRACT

In this work, one of the tasks of the methodology for creating an electronic textbook is considered, in the example of teaching the subject "the basics of programming for machine tools with programmed control". The basic concepts of file organization have been developed, which are required to reveal the essence of the studied subject using an electronic textbook by the power of a teacher.

KEYWORDS: *Electronic Textbook, CAD, CAM, CAE, Traditional Algorithmic Languages, Video Files, Frame.*

INTRODUCTION

Modern education is unthinkable without modern teaching aids. Among them are electronic resources, in particular, electronic manuals reproduced on a computer.

LITERATURE REVIVE

The study of electronic textbooks is presented in the works of O.B. Tyschenko, V.P. Bespalko, N.V. Apatova, N.N. Bulgakov, A.A. Verbitsky, A.M. Podkovyrova, G.K. Selevko, B.S. Gershunsky, M.V. Druzhinin, L.I. Korneeva, I.M. Kurdyumova, K.M. Levitan, T.S. Serova, E.V. Tkachenko, D.A. Toropov and others. Combining the opinions of these authors, we can conclude:

The use of various IT (multimedia, hypertext, diagrams, tables) in electronic textbooks provides significant didactic advantages of an electronic textbook in comparison with a printed one:

- A learning environment appears in multimedia technology with an interesting and visual presentation of information, which undoubtedly attracts the attention of listeners;

- The use of hyperlinks simplifies navigation and provides an opportunity to choose an individual scheme for studying the material;
- Application of modelling of the learning process, allows you to supplement the textbook with texts, track and adjust the trajectory of learning the material, and thus provide feedback.

Taking into account the theoretical analysis of the literature on the topic, the following didactic functions of a modern electronic textbook can be distinguished:

- Increases and stimulates the interest of listeners through multimedia;
- Activates mental activity and the effectiveness of memorizing material due to interactivity;
- Allows you to simulate and visualize processes for presentation in reality;
- allows you to individualize learning by speed, the pace of learning the material, as well as by logic and type of perception;
- Allows you to organize distance learning by correspondence or emergency training;
- Simplicity and ease of handling;
- Ability to update the resource of the electronic textbook;
- Automation of the educational process and an increase in the speed of providing educational services;
- Completeness of the transmitted information.

Such an innovative teaching technology as the use of electronic textbooks has not yet been sufficiently studied, although among the researchers of the role of electronic textbooks in the learning process it is advisable to note various scientists: A.A. Kuznetsov, A.A. Grechikhin, T.M. Lepsova, E.S. Polat, V.A. Wool, V.M. Gasov, A.M. Tsyganenko, V.N. Ageev, M.M. Subbotin, Yu.M. Tsivenkov, E.Yu. Semenov and others [2, p. 53].

The use of the aforementioned electronic textbook in English classes will contribute to the study of this issue. The process of creating and introducing modern electronic textbooks is going on all over the world; many countries have already started using e-textbooks in educational practice. The library and textbooks, where one could find answers to all relevant questions, were replaced by the epochs of the "electronic" version of books, magazines and articles.

Since 2007, the "Electronic Textbook" program has been operating in South Korea and a virtual interactive book has been used, i.e. 3D tutorial using so-called "augmented reality". The results of the experiment showed that academic performance in general increased by 30%.

In February 2012, the US launched the state initiative “The Digital Textbook Collaborative”, within the framework of which, in the near future, it is planned to provide every American student with modern electronic textbooks.

In Russia, the introduction of ES was planned within the framework of the national initiative "New School". Under this program, in September 2015, in a number of schools in Moscow, students began to use ES in their lessons [1,3]. Tools for creating electronic textbooks can be divided into groups, for example, using a complex criterion that includes indicators such as

purpose and functions performed, requirements for technical support, and application features. According to this criterion, the following classification is possible:

- Traditional algorithmic languages;
- General-purpose tools;
- Multimedia tools;
- Hypertext and hypermedia tools;

As a technical base, in the future, we mean IBM compatible computers, as the most common in our country and available to educational institutions.

MATERIALS AND METHODS

This article examines, on the basis of the above classification, the creation of an e-book for teaching students in the direction of "mechanical engineering" at the university. For example, you can take the subject "Programming machine tools with numerical control". It should be noted that at present there are many CAD, CAM, CAE systems that can automatically output the NC program applicable for machine tools with numerical control programs. But using a ready-made control program, he does not understand how to correct a failed situation, or create a new control program, in the event of a change in the technical tool.

This leads to the fact that the user should be sufficiently familiar with the program that he uses. Because of this, students are taught the subject of Numerical Control Machine Programming.

The theoretical description of a part of the subject is not difficult. But to understand all the keywords involved in the program, without the participation of the movement of the cutting element of the machine, in the processing of workpieces. Using traditional algorithmic languages, you can solve this problem. For example, the movement of a cutting tool may be directed by three Cartesian coordinates (up to a maximum of 9 coordinates). This movement cannot be shown using PowerPoint or other programs, which control the movement is based on the frame. Since taking into account any situation, the movement of the cutting tool is either very laborious, or it is not possible. Traditional algorithmic languages, for example, Delph 7 (C ++, Java, etc.) easily solve the problem. Below is a program is written in this language:

```
Unit Unit1;

Interface

Uses

Windows, Messages, SysUtils, Variants, Classes, Graphics, Controls, Forms,

Dialogs, ExtCtrls, StdCtrls, Buttons;

type

TForm1 = class (TForm)

Image1: TImage; Image2: TImage; Image3: TImage; Image4: TImage;

Image5: TImage; Image6: TImage; Image7: TImage;
```

```
ScrollBar1: TScrollBar; ScrollBar2: TScrollBar; ScrollBar3: TScrollBar;
Label1: TLabel; Label2: TLabel; Label3: TLabel;
procedure FormCreate(Sender: TObject);
procedure ScrollBar1Change(Sender: TObject);
procedure ScrollBar2Change(Sender: TObject);
procedure ScrollBar3Change(Sender: TObject);
private { Private declarations }
public { Public declarations }
end;
var Form1: TForm1;
var rasm:array [1..10,1..4] of integer;
xn,yn,zn:integer;
implementation
{$R *.dfm}
procedure TForm1.FormCreate(Sender: TObject);
var r:real;
begin
rasm[1,1]:=image1.Height;  rasm[1,2]:=image1.Left;  rasm[1,3]:=image1.Top;
rasm[1,4]:=image1.Width;
rasm[2,1]:=image2.Height;  rasm[2,2]:=image2.Left;  rasm[2,3]:=image2.Top;
rasm[2,4]:=image2.Width;
rasm[3,1]:=image3.Height;  rasm[3,2]:=image3.Left;  rasm[3,3]:=image3.Top;
rasm[3,4]:=image3.Width;
rasm[4,1]:=image4.Height;  rasm[4,2]:=image4.Left;  rasm[4,3]:=image4.Top;
rasm[4,4]:=image4.Width;
rasm[5,1]:=image5.Height;  rasm[5,2]:=image5.Left;  rasm[5,3]:=image5.Top;
rasm[5,4]:=image5.Width;
rasm[6,1]:=image6.Height;  rasm[6,2]:=image6.Left;  rasm[6,3]:=image6.Top;
rasm[6,4]:=image6.Width;
rasm[7,1]:=image7.Height;  rasm[7,2]:=image7.Left;  rasm[7,3]:=image7.Top;
rasm[7,4]:=image7.Width;
scrollbar2.Position:=scrollbar2.Max;
end;
```

```
procedure TForm1.ScrollBar1Change(Sender: TObject);
begin xn:=scrollbar1. Position; image3. Left:=xn+rasm[3,2]; image7. Left:=xn+rasm[7,2];
end;
procedure TForm1.ScrollBar2Change(Sender: TObject);
begin yn:=scrollbar2. Position; image7. Left:=xn+rasm[7,2]; image7.Top:=yn+rasm[7,3]; end;
procedure TForm1.ScrollBar3Change(Sender: TObject);
begin
zn:=scrollbar3. Position; image3. Left:=xn+trunc(zn*cos(pi/3));
image3. Top:=yn-trunc(zn*sin(pi/3)); image7. Left:=xn+trunc(zn*cos(pi/3)); image7. Top:=yn-
trunc(zn*sin(pi/3));
end;
```

With the help of this program, you can show the listeners an infinite number of positions of the cutting tool of the executing organ of programmed machines (Fig. 1). At the same time, you can explain the setting of the executive element of the machine to the beginning of the processing of work pieces. It is then easy to show machining using linear or circular cutter interpolation. It is enough to understand the essence of the block and the commands G00, G01, G02, G03.

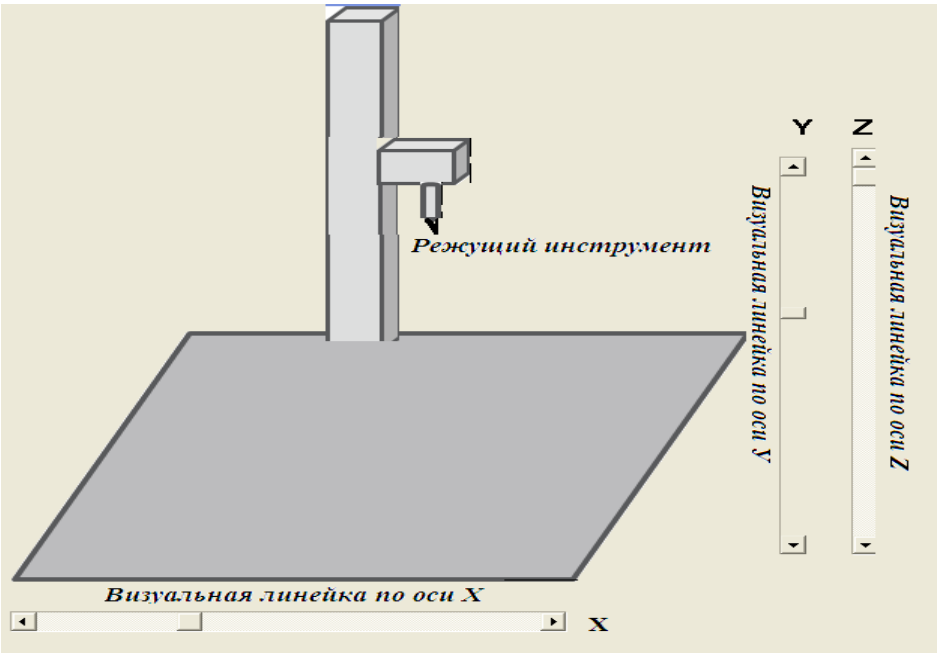
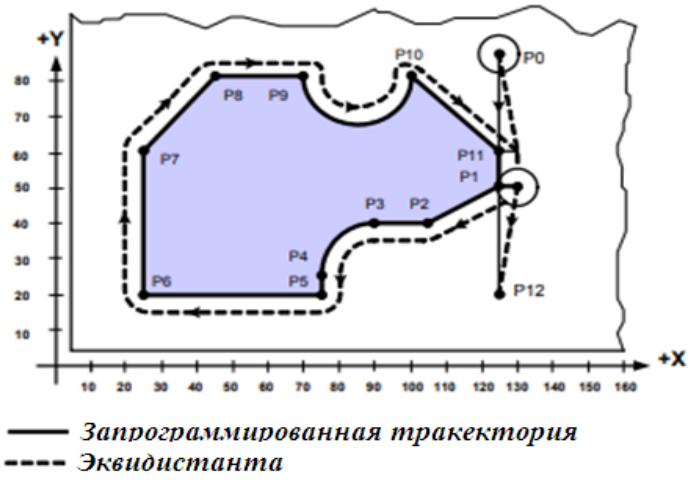


Figure 1.




```
N1   G01  F200
N2   G41  X125  Y60
N3             Y50
N4        X105  Y40
N5        X90
N6   G05  X75   Y25
N7   G01        Y20
N8        X25
N9             Y60
N10       X45   Y80
N11       X70
N12  G03  X100  R15
N13  G01  X125  Y60
N14             Y50
N15  G40        Y20
N16  M02
```

Figure 2.

Using traditional algorithmic languages, it is easy to compose a program illustrating the movement of the organs of a machine tool with numerical control, which is shown in Figure 2 and this program is shown next to the figures. We think everyone knows general-purpose tools in the operating system and it is not required to stop over this split.

Multimedia is now used very often thanks to modern electronic technology. Currently, using the Internet, you can find a lot of different types of videos showing one or another technological process. But these videos show the process that these producers planned to show (Fig. 4).

Figure 3.

Figure 3 shows a commercial for the manufacture of complex machine parts on numerically controlled machines.

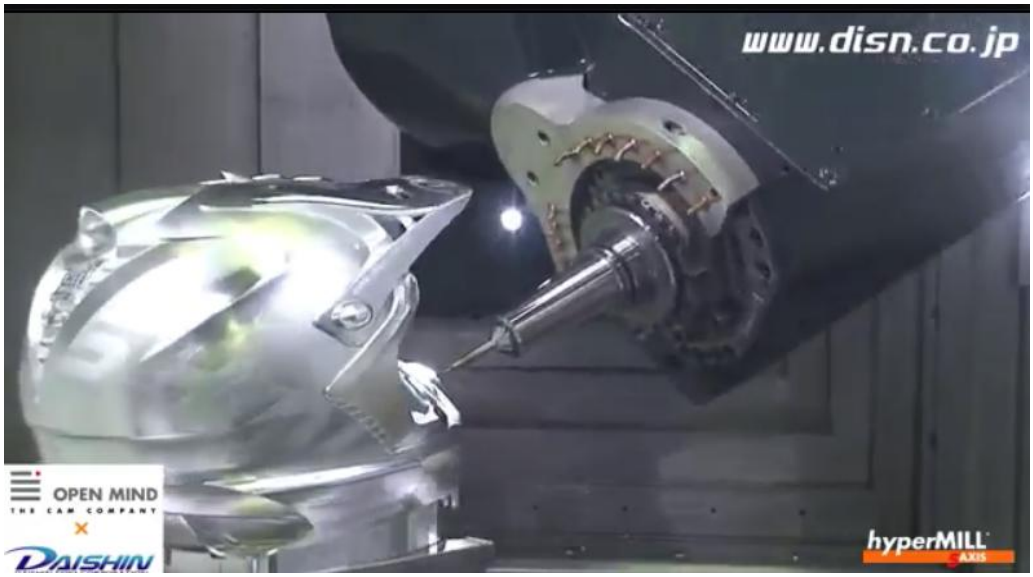


Figure 4.

Figure 4 shows the work of the executive bodies of 9-coordinate machine tools with programmed numerical control. Hypertext links are used to open the necessary files related to the subject. At the same time, it is advisable to use a slinging window, which allows you to correctly redirect the opening of the necessary files. In addition, you can use the speech accompaniment of the lesson.

CONCLUSION

During the course of classes on subjects, the abacus widely uses modern computer technology. To that end, benefit from the latest advances in this technology. To widely use traditional algorithmic languages, which gives a deeper understanding of the essence of the process, especially required by technical personnel. To save files that are used for explanations of topics, use a separate folder, which makes it easier to organize links to execution files.

REFERENCES

1. Tregubova O. P., (2014). Creation of an electronic textbook, festival of pedagogical ideas "Open Lesson", Moscow.
2. Kabanov A. M. Electronic textbook as a means of improving the quality of teaching a foreign language at a technical university. 3.00.02-Theory and methodology of teaching and upbringing Abstract of the dissertation for the degree of K.P.N.
3. Federal Institute for the Development of Education (FIRO), Electronic textbooks, Moscow, 2012
4. Koblova, D.V., & Kosareva, S.A. (2012). Electronic textbook as an innovative tool in the educational process. In Actual problems of pedagogy (pp. 146-148).
5. SINUMERIK 840D Programming Manual. The basics. Issue 09.01. [Electronic resource; pdf format], - SIEMENS, 2001.

6. SINUMERIK 840D Programming Manual. Advanced programming. Issue 09.01. [Electronic resource; pdf format]. - SIEMENS, 2001.

7. SINUMERIK 840D Programming Manual. Cycles. Issue 09.01. [Catalog]. - SIEMENS, 2001.

8. SINUMERIK 810D / 840D / 840DL Beginner's Manual: Milling and Turning. Edition 10.03. [Computer file; .pdf]. - SIEMENS, 2003.