The technology of creating a multimedia electronic textbook without knowledge of programming languages

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Abstract. A technology for creating a multimedia electronic textbook without knowledge of programming languages on the AutoPlay Media Studio 8 platform (Indigo Rose Corporation, demo version) using the following programs: UVscreenCamera (UVsoutium company, free version, video presentation recording); Paint 3D (a free application included with Windows 10, creating page layouts); “Ayren” test editor (the developer is Ostanin S., free, creation of separate executable test files) is provided in the article.

1. Introduction
The modernization of healthcare is one of the priority areas of the socio-economic development of the Russian Federation and is aimed at creating a system that ensures the availability of medical care and increasing the efficiency of medical services, the volume, type and quality of which should correspond to the level of morbidity and the needs of the population, the advanced achievements of medical science [1].

The implementation of the tasks of practical health care requires changes in the professional activities of nursing specialists, the development of modern approaches in the formation of the educational environment in the system of higher, secondary and additional professional education. Therefore, it became important to create strategies focused on large-scale, effective and high-quality education for health professionals, including nursing professionals. The introduction of digital or information technologies (IT) into education has become such an innovative strategy. Digital education (also known as e-learning) is the process of teaching and learning using digital technologies [2].

The main areas of IT application in education are the following: development of pedagogical software for various purposes; development of educational websites; development of methodological and didactic materials; management of real objects; organizing and conducting computer experiments with virtual models; implementation of targeted information search [3].

There is a need to bring the content of education, teaching technologies and methods of assessing the quality of education in accordance with the requirements of modern society. In this regard, it is necessary to create teaching aids that meet modern didactic ideas, educational goals and rapidly developing information and technical means. An electronic teaching aid is a key didactic link in information and communication technology of education. Today, no one doubts the fact that electronic teaching aids can enrich the educational process and make it more interesting and attractive for students [4].

In order for medical education to take full advantage of the benefits of IT in teaching, it is important that the needs and psychological characteristics of students should be taken into account. The main
The advantage of modern students, which must be taken into consideration by teachers in the learning process, is rugged individualism and intellectual potential; they can easily navigate the world information resources and quickly find the information they need, but their “clip” thinking prevails, which is focused on processing information in short portions, that is, the amount of information must fit on a computer screen, only in this case it will be understood and remembered. Information should be given easily, accessible and visually, because they cannot stay focused on one thing for a long time [5].

The researches have shown that creating digital tools to support and reinforce the learning process was rewarding and very different from monotonous classroom activities. When applied, students had access to a detailed presentation and images with the best resolution, to links to theory; resources combining audio and video; exercises that problematized the teaching material [6].

Electronic teaching aids (ETA) are software and methodological training complexes designed for students to independently study educational material in certain disciplines [7]. Text electronic textbooks have long been included in educational practice, and are analogous to the printed edition. More advanced multimedia electronic teaching aids contain video presentations of theoretical material, video films, and tests for self-examination of the passed material by students.

Our goal was to create a multimedia electronic teaching aid (META) for independent work of students at the Faculty of Higher Nursing Education during the practice “Fundamentals of Research”, “Research Practice”. Teaching the fundamentals of research is emphasized as it forms the basis of evidence-based nursing practice and contributes to the improvement of nursing patient care.

To achieve this goal, it was necessary to solve the following tasks: to study and select the software necessary to create a multimedia electronic textbook; to develop the structure and materials of the manual - to create video presentations, video films, text documents, project design.

2. Preparation for the creation of a multimedia electronic teaching aid

Preparation for the creation of META included the following stages:
1. Development of structure and content.
2. Choice of software.
3. Downloading, installing and mastering programs.
4. Creation of materials for META - video presentations, video films, texts in PDF format, tests.

The developed structure of our META is modular: theoretical material is presented by two modules (video presentations, theoretical material): module 1 – “Methodological foundations of scientific research” and Module 2 – “Organization and conduct of scientific research”; we decided to give practical assignments in PDF format, examples of assignments - video films; the “Testing” section should include test items for the materials of modules 1, 2.

There are many programs for creating META, but we chose AutoPlay Media Studio 8 (Indigo Rose Corporation, demo version), which is a complex software solution that allows designing META using any content - audio, video, graphics, text, flash-animation. The program has a simple, intuitive interface that is easy to learn. And all this is virtually without knowledge of programming languages. Autoplay Media Studio 8 contains a large number of visual tools and settings that allow creating programs “quickly and easily”.

For the design of the pages, the program Paint 3D was chosen (a free application included in Windows 10), which allows creating two and three-dimensional objects, adding text and effects, drawing.

UVscreenCamera software (UVsoutium, free version) was chosen to create video presentations, it is simple and easy to use for capturing, recording from a computer monitor, editing and saving in various formats.

It was planned to create various tests with the choice of one or more correct answers, for establishing correspondence, for ordering and for classification) and they should be saved in separate stand-alone executable files (insert into AutoPlay Media Studio 8). For such purposes, the most suitable program is the test editor “Ayren” (developed by S. Ostanin, free).
The programs were downloaded and installed on a personal computer. The instructions for all programs, the requirements for the created video presentations, video films, tests and texts have been read. Page sizes have been chosen.

3. Creation of materials for META
Creating page layouts was simple and convenient in the Paint 3D graphics editor. The developed page layouts were the same size and saved in JPEG format (figure 1).

![Figure 1. Layout of the META page, “Testing” section with “active buttons” (indicated by blue arrows, separate executable test files are attached to them).](image)

![Figure 2. Panels of the UVscreenCamera program: A - general panel, B - setup menu.](image)
The UVscreenCamera program panel is small and includes files, recording area, actions, settings, help (figure 2 A) at the top; a recording area (select the size of the object on the monitor) in the middle section, and then there are active buttons - sound recording and sound sources, start recording. First, the video recording area (frame rate - 10 frames / sec.), Sound (from a microphone or headphones, sensitivity), visualization and hot keys (figure 2 B) were adjusted, an object on the monitor was selected, and only then a video presentation was recorded. The program allows editing the created video - cropping and cutting unnecessary frames, saving in AVI format. Files with the AVI extension can contain video and audio data compressed using different combinations of codecs, which allows video and sound to be played synchronously.

The process of creating executable test files began with opening the “Ayren” test editor program. The working window of the program has the familiar menu – “File”, “Window”, “Edit”, “Help” at the top and consists of two sections: in the left, the created test questions are displayed, in the right, questions with answer options (depending on the selected type of test question) are displayed (Fig. 3A). Click on “File” and save the test in a separate folder in the .it2 format, which allows editing the test later.

The type of test question (questions in the choice of answer, by entering the answer, for correspondence, ordering) is selected (Figure 3A); the question to the test (Figure 3B) and answer options (Figure 3.C) are added. After completing the test creation, save it in EXE format (it is a separate executable file) (Fig. 3.D). After passing the test, students receive results that allow assessing the level of knowledge in this section.

![Figure 3](image)

**Figure 3.** Work window of the "Ayren" test editor. A – choice of the type of test question; B - add a question to the test; C - add an answer option; D - save the test in EXE format.

All texts created for META in M. Word format are transformed into PDF format.

Now that all our materials are ready, we can start creating, assembling and saving them in AutoPlay Media Studio 8.

**4. Creation of META: assembly and saving of materials in AutoPlay Media Studio 8.**

Open the program and in the window that appears, click “New Project”, then in the menu that opens, write the name of the project and select an empty template. On the program panel, in the “Project” section, click “Settings” and set the size of the work window (predefined), page style (figure 4A, B).
The next step is to insert the page layout: place the cursor in the middle of the page and right-click the page menu (figure 4 C).

In the menu, write the name of the page, check the box “Change background”; click “Browse” and select the layout of this page on the computer. The page layout is inserted.

On the program panel, in the “Page” sections, the required number of pages (in our case there are 7 of them - content, module 1, 2, practical tasks, examples, testing) is added and we design each page is designed in the same.

We need to insert “active buttons”, sign them and attach video presentations, video films and texts in PDF format to them, redirect to another page. To do this, on the program panel, click “Object” and then “Button”. Select the button design, click on it, and it is inserted into the page. We define the settings of the button is defined: write the name, in “quick action” - attach the necessary material (video presentation, etc.).

After we have inserted all the necessary materials, we need to build our project. We select the section “Publishing” on the program panel, and, firstly, we preview our project, and then, build it with saving on the computer hard disk or CD. To open a project and work in it, there is no need to download AutoPlay Media Studio.

5. Conclusion.
Thus, we have created a multimedia electronic teaching aid without knowledge of programming languages on the AutoPlay Media Studio 8 platform, which will help facilitate understanding and memorization (active, not passive) of the most essential concepts, statements and examples, involving in the learning process other than the usual electronic study guide, the capabilities of the human brain, in particular, auditory and emotional memory [8].

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