USE OF DIGITAL INSTRUMENTS AND SERVICES IN THE SYSTEM OF CHILDREN'S ADDITIONAL EDUCATION

USO DE INSTRUMENTOS E SERVIÇOS DIGITAIS NO SISTEMA DE EDUCAÇÃO COMPLEMENTAR DE CRIANÇAS

USO DE INSTRUMENTOS Y SERVICIOS DIGITALES EN EL SISTEMA DE EDUCACIÓN ADICIONAL INFANTIL

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ABSTRACT: The study examines digital instruments and services that can be used in the system of additional education. Being able to use digital instruments and services in professional activity and being ready to account for modern trends in the development of digital technology is important for a teacher in additional education. The organizational foundation of additional education is a digital learning platform. Digital technologies require new approaches to the development of educational and methodological materials, types of activities, methods, means, and organizational forms of learning to ensure the high quality of the educational process. The authors explore the use of Google digital services, resources for creating infographics, and MindMeister, a service for creating mind maps, in the system of additional education.

KEYWORDS: Digital transformation. Additional education system. Digital services. Digital instruments. Infographics. Mental maps.

RESUMO*: O estudo examina instrumentos e serviços digitais que podem ser usados no sistema de educação complementar. Ser capaz de usar instrumentos e serviços digitais na atividade profissional e estar pronto para dar conta das tendências modernas no desenvolvimento da tecnologia digital é importante para um professor em formação complementar. A base organizacional da educação complementar é uma plataforma de aprendizagem digital. As tecnologias digitais exigem novas abordagens para o desenvolvimento de materiais educacionais e metodológicos, tipos de atividades, métodos, meios e formas organizacionais de aprendizagem para garantir a alta qualidade do processo educacional. Os autores exploram*

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o uso de serviços digitais do Google, recursos para a criação de infográficos e MindMeister, um serviço para a criação de mapas mentais, no sistema de educação complementar.

***PALAVRAS-CHAVE**: Transformação digital. Sistema educacional complementar. Serviços digitais. Instrumentos digitais. Infográficos. Mapas mentais.*

***RESUMEN**: El estudio examina los instrumentos y servicios digitales que se pueden utilizar en el sistema de educación adicional. Ser capaz de utilizar instrumentos y servicios digitales en la actividad profesional y estar preparado para dar cuenta de las tendencias modernas en el desarrollo de la tecnología digital es importante para un docente en educación adicional. La base organizativa de la educación adicional es una plataforma de aprendizaje digital. Las tecnologías digitales requieren nuevos enfoques para el desarrollo de materiales educativos y metodológicos, tipos de actividades, métodos, medios y formas organizativas de aprendizaje para asegurar la alta calidad del proceso educativo. Los autores exploran el uso de los servicios digitales de Google, los recursos para crear infografías y MindMeister, un servicio para crear mapas mentales, en el sistema de educación adicional.*

***PALABRAS CLAVE**: Transformación digital. Sistema educativo adicional. Servicios digitales. Instrumentos digitales. Infografías. Mapas mentales.*

Introduction

The system of children's additional education is undergoing major changes due to the introduction and spread of digital technologies. In the new conditions, the role of the teacher and the requirements for their digital competencies are changing.

New digital technologies call for new approaches to the development of educational and methodological materials, types of activities, methods, means, and organizational forms of learning to ensure the high quality of the educational process. The latter needs to focus on the necessary learning outcomes of children, including the use of modern digital technology, the development of a digital education environment, the provision of publicly available broadband access to the Internet etc. (LAPSHIN *et al.*, 2020a; 2020b).

Web resources and services, tools for online learning and communication, open educational resources, and artificial intelligence systems are growing in demand in the educational process.

Methods

The main research method used in the study is pedagogical analysis.

The article provides an analysis of digital instruments and services and the experience of their use in the educational process, as well as identifies the pedagogical conditions for the adaptation of the methods and their implementation in children's additional education.

Research procedure

The digital transformation implies a change in the requirements for the digital competencies of a teacher in additional education. A teacher must know how to use digital instruments and services in their professional activity and be ready to account for the modern trends in the development of digital technologies. For this, a teacher needs to possess:

- the skills of working with modern information technologies (preparing texts, illustrations, schemes, audio and video materials etc.);
- the knowledge of digital instruments and services and the ability to employ them in the educational process;
- the knowledge of the pedagogical fundamentals of modern e-learning and the use of distance learning technologies;
- the skills of developing online learning courses;
- the ability to organize distance learning and collaborative work based on online technologies;
- the ability to design, develop, and use the instruments for educational process diagnostics and assessment;
- the ability to design, develop, and utilize the information resources of a digital information and learning environment of an educational organization.

Let us examine some digital instruments and services that may be used in the system of additional education.

Digital learning platform

The priority project in the sphere of education "Modern Digital Learning Environment in the Russian Federation" was approved by the Government of the Russian Federation on October 25, 2016, as part of the state program "Development of Education".

According to the Federal Law of December 29, 2012, N 273-FZ (as amended on April 4, 2021) "On education in the Russian Federation", "Under distance learning technologies we

understand educational technologies implemented mainly with the use of information and telecommunication networks with the indirect (distance) interaction of students and teachers".

As specified by Federal State Educational Standards, "An information and education environment of an educational institution includes: a set of informational educational resources, including digital educational resources, a set of technological means of information and communication technologies: computers, other ICT equipment, communication channels, and a system of modern learning technologies that provide for learning in a modern information and education environment" (FEDERAL STATE EDUCATIONAL STANDARDS, 2021).

A digital learning platform is an information space that unites participants in the educational process, which provides an opportunity for distance education and access to educational, methodological, control and assessment, and other materials, as well as allows monitoring students' level of knowledge.

A digital learning platform must contain the following blocks (the necessary minimum) for the organization of e-learning:

- a block for working with educational and other materials using various devices;
- a block for feedback and an electronic mailing list (chats, e-mail letters, an analog of social networks, etc.) for consultations, discussions etc.;
- a block for planning and creating educational courses;
- a knowledge assessment block;
- a block for monitoring and recording the process and outcomes of learning;
- an administration block;
- a block for data collection and analysis.

An educational organization can develop a digital learning platform independently or use a pre-made solution (for instance, CMS Moodle).

The most popular learning platforms mainly focus on additional professional training (advanced training, retraining etc.), however, some platforms that start to appear now can also be used for distance learning of children.

All of the platforms are united by the objectives they allow to resolve, the differences lie only in the platform interface, fee plans, informational content, and choice of teaching methods.

The disadvantages of using digital learning platforms also must be borne in mind:

- the lack of communication and the social aspects of learning – the exchange of information and the emotional involvement in the educational process
- insufficient control from the point of discipline.

Digital services by Google

Google services can be used to organize students' work with the use of distance learning technologies.

The Google environment contains a variety of instruments that may be useful in organizing, supporting, and controlling students' group and individual independent works (GOOGLE ENVIRONMENT, 2021).

Google services are focused on creating online information resources that enable communication and collaboration. With the help of Google services, it is possible to organize various collective events:

- creating, collaboratively editing, and discussing various information (Google Docs, Google Spreadsheets, Google Presentations, and Google Images);

- creating personal and collective blogs and adding various materials to them: documents, calendars, maps etc.;

- creating personal calendars and adding the descriptions of events to them, planning events in a team;

- creating one's own educational video channels and groups using the media resources of YouTube.

Google Docs, Spreadsheets, Presentations, and Images

The free online office provided by Google includes a word processor, a spreadsheet processor, a presentation service, a graphic editor, and an online cloud file storage service with file sharing features. It also provides the feature of creating an interactive worksheet.

The advantages of Google services include:

- they work in a web browser, there is no need to install it on the user's computer;

- documents and tables created by the user are saved on a special Google server or can be exported as a file;

- the entered data is accessible from any computer connected to the Internet.

Some disadvantages include:

- primitive functions compared to specialized software;

- no opportunity to work and save progress offline.

The technology of using an interactive worksheet:

- the teacher creates and publishes an interactive worksheet in the e-learning environment (by adding a link or pasting code to the page);

- a copy of the sheet is also created for each student to clone the template. For this purpose, the sharing settings can be edited for any user who has a link;

- the student renames the cloned sheet and can modify and edit it (complete the task);

- once the task is completed, the student publishes the URL of their worksheet in an e-learning environment, thereby giving others access to their work.

Infographics are a graphical way of presenting information, data, and knowledge, the purpose of which is to present complex information quickly and clearly. It is a form of graphic and communication design.

Infographics not only organize large amounts of information but also more clearly show the relationship of objects and facts in time and space, as well as demonstrate trends.

It is vital to not only convey information to the learner correctly but also to present it as attractively as possible. The teacher can use infographics to develop their own resources or as an assignment for the students. The teacher can give students the challenge of creating their own infographics. Students can work with a lot of complex, confusing, and unstructured information. They must choose for themselves which symbols, images, or titles best match the way they perceive the given information. In the process of creating infographics, students develop their skills in visual thinking, information processing, and the use of modern digital technologies.

The advantages of infographics are the following aspects: ease of use; rich visual material; group and individual approaches allow organizing work both with the entire group and each learner.

There are many different Internet resources for creating infographics, for example, Canva, Crello, Venngage, Createlly, and many others.

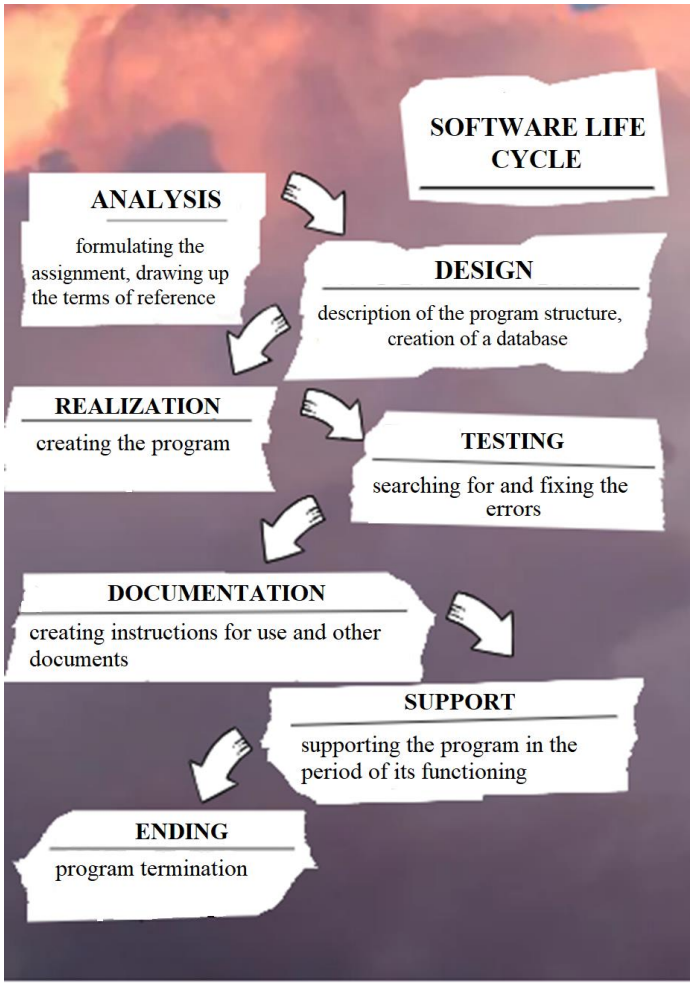
We will focus on the free service Crello (CRELLO ENVIRONMENT, 2021). This service has a wide range of features, such as:

- adding and deleting background;
- adding speech bubbles;
- adding text to images;
- editing images;
- photo filters;
- resizing;
- transparency and layers;
- adding animation;
- adding audio and video information; etc.

Using the service requires registration.

For example, consider the infographic on the topic “Software Life Cycle” (Fig. 1).

Figure 1 – Infographics in the Crello environment



Source: Devised by the authors

MindMeister service for creating mind maps

A mind map is a kind of block structure that shows the connections between thoughts and the main idea. What is important in it is the arrangement of the parts and their sizes.

This visualization technique is also called an intellect map or a diagram of connections. The latter, in turn, serves as an instrument of creating connections between data.

Ming maps allow visualizing the whole picture of one's thoughts and help to understand what follows from what and how it can be improved. They can also help to structure one's thoughts and make memorizing the material in such a form much easier. Mind maps can also be used for planning.

Modern mind maps make the presented information easier to perceive and memorize by virtue of the varying design of their blocks, contrasting colors and sizes, and the use of visual images (drawings). The main idea is always placed in the center of the map.

The main advantage of the mind mapping technique is the opportunity to structure information and obtain a general idea of the presented information (on a problem, project, or task).

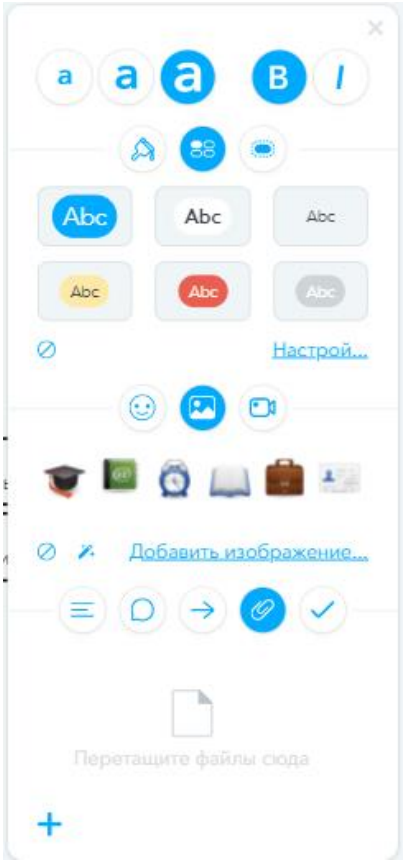
One of the digital resources for designing mind maps is MindMeister (ONLINE MINDMAPPING, 2021). This website has an eye-pleasing design, which, however, is not as important as its functionality.

MindMeister provides other users with access to editing the mind map, which allows receiving a different perspective on the goals and objectives.

Moreover, the website saves all the changes and gives information on the time a new part of the map was added. The deleted sections can also be returned.

The website offers simple and convenient editing tools; the user can specify color, block size, outline type, insert images, and even videos (Fig. 2).

Figure 2 – MindMeister tools panel

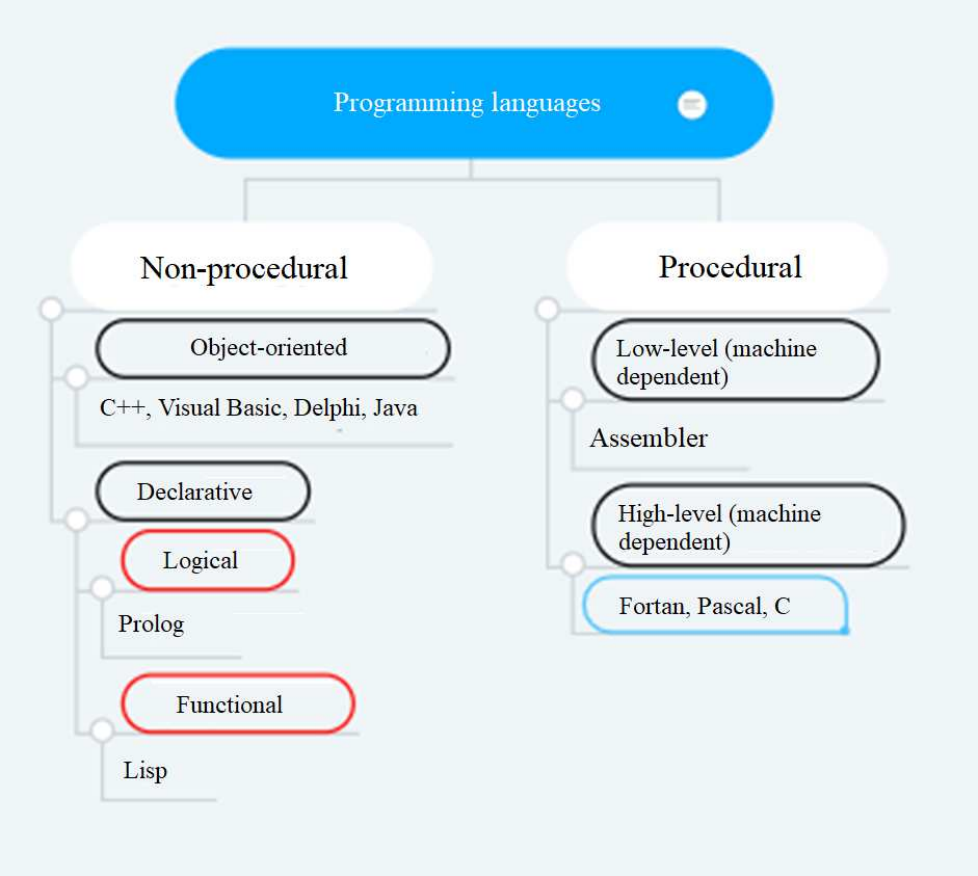


Source: Devised by the authors

Creating a mind map does not require special skills, and even if difficulties do arise, help information is always available on the website.

The created mind maps (Fig. 3) can be exported as an image, PDF file, or DOC file.

Figure 3 – An example of a mind map



Source: Devised by the authors

Conclusion

A digital learning platform provides for designing and organizing the educational process, and digital resources allow filling educational content with a variety of material.

The organization of learning in the system of children's additional education based on digital instruments and services causes a genuine interest in students. This form of work is natural for them (brief presentation and visual images, as a consequence of the use of social networks and messengers) and is an important addition to traditional forms of learning. Digital instruments and services allow each learner to be involved in the educational process, build individual development and learning trajectories, and ensure the optimal formation of important qualities and competencies.

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