

Educational Establishment

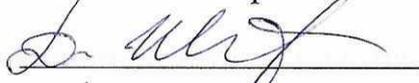
“Belarusian State University of Culture and Arts”

Faculty of Cultural Studies and Sociocultural Activities

Department of Information Technologies in Culture

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Head of the Department



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## METHODOLOGICAL MANUAL

### ON THE EDUCATIONAL DISCIPLINE

### INFORMATION TECHNOLOGIES IN ART HISTORY

the syllabus of the academic discipline for the specialty  
of the II stage of higher education 7-06-0213-01 Art History

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## EXPLANATORY NOTE

The means of studying and popularizing various fields of knowledge, including artistic culture in general and certain types of arts, such as literary criticism, musicology, theatre studies, film studies, etc., are changing significantly in the information society. Training of a specialist in the second stage of higher education (master's degree) in the field of art history should include exploring tools that will help create conditions for the development of new ideas in the field of art, stimulate creative thinking, generate ideas of your own, as well as come up with ways to attract as many connoisseurs as possible. Information technology is one of the most effective tools to help organize access to information resources and ensure interactivity.

The purpose of teaching the methodological manual «Information Technology in Art» is to prepare students to use information technology as a tool for organizing activities to develop new ideas in the field of art, stimulate creative thinking, generate their own ideas, and develop tools that expand the circle of art lovers.

In the process of development of the informational society, the means of studying and popularizing various fields of knowledge, including artistic culture, are substantially changing. Training a specialist in the second stage of the higher education in the field of art criticism should include the study of tools that will help to create conditions for the development and management of new ideas in the field of art, stimulate creative thinking. The effective tool to organize access to information resources and ensure interactivity of the process is the information technology.

The main purpose to teach the use of Information Technology in Art is to develop students' creative abilities through interactivity, which contributes to the development of practical professional skills. Currently, information systems are widely used to work with text, statistical and dynamic images (video), animated computer graphics, speech, music, etc.

The objective of methodological manual «Information Technologies in Art» is to train students to use the application of information technology to study art, design research and organize interaction with the audience to popularize certain ideas

The content of the is aimed at the formation of universal competencies, including the skills to use information technology to solve research and innovative problems, namely, being able to choose the direction of development of information and communication systems and technologies, to effectively use information resources in organizational and managerial activities, stimulate creative thinking, generate their own ideas, and develop means to attract as many art connoisseurs as possible.

Tasks of the academic discipline:

- mastery over the methods and means of solving research problems in the field of culture and arts through the use of information technology;
- formation of a general idea of the areas of application of information technology in various areas of art criticism;
- studying the main instruments for developing tools to attract art lovers, the most relevant in the context of informatization;
- acquisition with skills to create a unique product using different techniques information presentation for expressiveness.

As a result of studying the discipline, the student should know:

- theoretical foundations of the functioning of art criticism information in society and problems of informatization of culture and art;
- methods of organization of the scientific data collection and processing based on the use of information technology when conducting art studies;
- modern achievements in the development and use of digital and communication technologies in the field of theoretical and practical art criticism;

- methods of creation of the multimedia information products of the main types of art

- organization of activities in cultural institutions using information technology.

The student must be able to:

- find and assess art criticism information in the web space and adapt it for further distribution in the media environment;

- create multimedia information products of the main types of art;

- comprehensively use a variety of software tools to solve research and professional tasks of an art critic;

- use network media resources in the professional activities of an art critic;

- organize the activities of cultural institutions and the implement projects in the field of culture and art using cloud web technologies;

- create information resources in the media environment, in accordance with modern standards.

The student must be able to apply:

- methods of designing information systems of various art criticism directions;

- methods of organizing activities to implement a project in the field of culture and art based on Internet technologies;

- methods of media resources development to attract art connoisseurs;

- methods of development of multimedia information products of the types of art.

The major forms of the educational process are lectures, seminars, laboratory work, an independent study of individual issues, the implementation of independent research based on modern information technologies. In the process of training, students should prepare a creative project.

Lectures provide information on the problematic theoretical issues of information modelling of objects, phenomena, processes and systems, the fundamentals of designing information systems of various art criticism directions and scientific research in the field of art criticism. The issues of information support of creative processes are considered. This methodological manual is aimed at professional training of students in the information technology field application in the study of art, research design and organization of interaction with the audience to popularize ideas.

The lectures provide for the study of problematic theoretical issues of information modelling of objects, phenomena, processes and systems, the study of the basics of designing information systems for various art history areas of scientific research in the field of art history. The issues of information support of creative processes are considered.

The methodological manual of the discipline includes the explanatory note, theoretical section, practical part, recommendations for assessment.

## UNIT 1. INFORMATIZATION OF SOCIETY. FUNCTIONING PROBLEMS.

### Main issues

1. Informatization of society
2. Development of the synthesis of information technology and art
3. Distinguishing features of the information society
4. The positive sides of informatization
5. Information Society Challenges

*Aims:* to analyze the terms «informatization of society», «informatization of culture»; to identify the features of modern informatization of society.

The information society is a new historical phase of the development of civilization, in which the main products of production are information and knowledge.

Information is the source of cultural development and the channel of this development: it is inherited in the form of social experience, contributing to the emergence of social memory. The place and role of information in the structure of social memory is determined by its regulatory beginning in the process of interaction of traditions and innovations in cultural development.

New intellectual and humanitarian technologies are being actively and constantly formed, which rely mainly on information and communication resources belonging to the synergetic class.

there are three main directions for **the development of the synthesis of information technology and art:**

- electronic databases in the humanitarian field (electronic libraries, virtual museums);
- computer technologies in art (art projects, multimedia portals, web design, visualization and modeling of the architectural environment);

- humanitarian and social technologies in global computer networks (virtual reality concept projects, interactive art portals).

Creating media projects requires deep knowledge in the field of information technology and the ability to operate with them. For the project not to turn out to be mechanistic and amateurish, it should be based on a creative idea that does not contradict the traditional cultural context.

During the transition to the information society, any organizational structure increasingly uses information to increase efficiency, stimulate innovation, and strengthen competitiveness. Information becomes the subject of mass consumption among the population, there is an intensive formation of the information sector of the economy, which is growing at a faster pace than other industries.

The informatization of society generates problems and phenomena: the spread of digital technology and the development of information technologies, the globalization of the information environment; the increase in human intellectual capacity, the complication of the social system and the formation of a network society; the problem of information security, including social and psychological security.

The subject of informatization is a person. Then the process of informatization must pass through the cognitive screen of those individuals for whom knowledge is valuable. If there is no phenomenon of knowledge and culture, information loses its meaning, its meaning. Informatization has led to the expansion of information links between regions, countries, peoples, etc.

In the informatization of society, it is necessary to strive to use all its advantages arising from fundamentally new technical and technological opportunities for individuals and entire communities. At the individual level, these are high-quality and affordable services at the enterprise level. It is the development of innovations and the improvement of labour efficiency to ensure greater competitiveness. At the regional and national levels, maximize the use of creative and cultural potential by developing multimedia tools and filling them with appropriate content.

The concept of the information society is associated with the development of information technology and telecommunications.

**Distinguishing features of the information society:**

- 1) an increase in the role of information and knowledge in the life of society;
- 2) an increase in the share of information communications, products and services in the gross domestic product;
- 3) creation of a global information space that provides:
  - effective information interaction of people;
  - their access to world information resources;
  - meeting their needs for information products and services.
- 4) changes in the social and professional structure of society. Under the new conditions, intellectual and moral capital is becoming one of the main types of social wealth.
- 5) Information society - a society with the highest degree of cultural and spiritual diffusion (interpenetration of cultures) and synthesis of the spiritual worlds of different peoples
- 6) The information society is characterized by a completely different type of political relations. The conditions for the all-around democratization of political and public life have significantly increased: with the creation of world information systems, state and ideological barriers have lost their functions and the ability to limit the free exchange of opinions, views, ideas.

**The positive side of informatization** is the transition to new forms of employment. There is a possibility of remote work. Remote work erases state borders when recruiting employees - work under contracts without any direct contact with the employer.

New jobs are focused on highly qualified specialists, which, in turn, should determine the deepening of educational processes in higher and postgraduate education.

Education, the skill of working with complex electronic devices becomes a prerequisite for self-realization in the information society. New jobs are focused on

highly qualified specialists, which, in turn, should determine the deepening of educational processes in higher and postgraduate education.

In an information society, the way of life and the system of values are changing. The importance of cultural leisure is increasing in comparison with material values. Persons with disabilities, in particular the elderly, will be able to continue working even after retirement.

### **Information Society Challenges:**

The problem of inequality in access to new information technologies at the international level and within each state. Disproportionate use of the possibilities of the Internet and information and telecommunication technologies.

The problem of legal regulation of the Internet. To prevent the dissemination of obscene materials that pose a threat to the moral foundations of society. Solving this problem requires government intervention in the form of the adoption of appropriate laws regulating related activities. Given the global nature of the Network, it is possible to cope with this problem only through international cooperation.

There are two main theoretical and methodological approaches to the informatization of society.

The technocratic approach reduces the informatization of society to the technical and technological equipment of people's activity in production and management. In this case, information technology is regarded as a means of increasing labour productivity.

The sociological approach considers informatization as a process covering all spheres of human activity, affecting the person himself - his knowledge and morality, economic and spiritual interests, personal development. The informatization of society is a combination of interrelated technical, economic, social, political, spiritual and cultural factors. These factors ensure the expansion and large-scale receipt, exchange and application of the information in society for the further development and improvement of society and its members.

The most notable technological change that has fundamentally changed the human communication system is the widespread use of network technologies and the Internet. The introduction of these technologies made it possible to realize the functions of collective, remote work. The communication capabilities of a person have changed due to quick connection to any group of addressees, the speed of receiving and transmitting information, the possibility of operational use of information from electronic archives and databases.

*Conclusions:* informatization is an organizational, socio-economic, scientific and technical process that provides conditions for the formation and use of information resources and the implementation of information relations. Information technology is a set of processes, methods of searching, receiving, transferring, collecting, processing, accumulating, storing, distributing and (or) providing information, as well as using information and protecting information.

The global process of informatization of society is a manifestation of the general pattern of civilization development. Informatization of society entails many radical scientific, technical, economic, and social changes. It significantly changes the usual living conditions of people, their production activities, everyday life, and recreation.

The informatization of society leads to progressive consequences but also brings challenges to modern society.

*Key concepts:* informatization of society, process of informatization, information society challenges.

**Answer the following questions:**

1. What is the minimum element of information?
2. What Internet sources for making cultural research do you know?
3. What types of information technology are used in culture?
4. What types of information technology are used in scientific research?
5. What types of different data?

### **Talking points**

1. Speak on the distinguishing features of the information society.
2. Speak on the main directions of the development of the synthesis of information technology and art.
3. Speak on some aspects of the positive side of informatization.
4. Speak about the Information Society Challenges.
5. Features of mediatization in various areas of art history.
6. Activity virtualization.
7. Multimedia as a means of communication, artistic creation, a type of computer technology.

## UNIT 2. MULTIMEDIA IN ORGANIZATION AND PRESENTATION OF RESEARCH IN THE FIELD OF THEORETICAL AND PRACTICAL ART CRITICISM

### **Main issues**

1. Mediatization of culture.
2. Multimedia.
3. Virtual reality and augmented reality

*Aims:* to analyze the terms «multimedia», «mediatization», and «virtual reality» «augmented reality»; to identify the features of modern informatization of culture.

Computerization (improvement of means of information retrieval and processing); mediatization (improving the means of collecting and distributing and storing information); intellectualization (development of people's abilities to perceive and generate information) are informatization processes from the social informatics point of consideration.

«Multimedia», «media culture», and «media art» are modern concepts used in the information environment. These phenomena are not synonymous but do have some points of interconnectivity.

The term «multimedia» is ambiguous.

Multimedia is considered to be a multimedia program, a product created on the basis of multimedia technology and computer equipment (a CD-ROM / DVD in a computer - a special device for CD and DVD products; sound and video cards that reproduce sound and video information; computer memory size; monitor resolution and some other parameters) [8].

Multimedia is treated as a special type of computer technology that combines both traditional static visual information (text, graphics) and dynamic speech, music, video fragments, animation, etc. This «technical and technological

interpretation» of the concept of «multimedia» is most often used by specialists in the field of computer technology [8].

That is, a multimedia «poly-environment» is a single space, syncretic representation of different types and methods of providing information (text, graphics, sound, etc.). However, it is too narrow to consider multimedia only as a type of computer technology or as a marketing tool. Currently, modern information and communication technologies (the Internet) are intensively developing and becoming a more effective tool for individual creativity and collective cooperation. Progress and innovation are inherent to the very logic of the technological development due to the common research interests of local and international communities and easily accessible and direct communication, as well as the freedom of access to information (cultural and art servers, mailing lists, videoconferences, etc.).

Multimedia, as any progressive phenomenon, and brings problems. For example, the mosaic nature of culture, which replaced the educational model of culture; eclecticism of the sphere of knowledge as opposed to a systemic worldview based on a unified approach paradigm; orientation towards reproduction instead of creativity, etc. [8].

The disadvantages of «virtual culture» that pose new problems also include:

- 1) inaccessibility of search methods of certain information;
- 2) imprecision of materials (errors in digital libraries, permitted by scanning materials);
- 3) abundance of advertising, resulting in the «information noise», etc.

Marshall McLuhan was the first mass media theorist. In the 1970s he predicted the onset of information technology era. He proposed a culturological concept that described the sequential evolution of technical means that produce a revolutionary convert of all practices and accompanying theory of interpersonal communication, in different periods of history - from the wheels and the Gutenberg printing press to the supersonic aircraft, and colour television [9]. The absence of a computer and the global Internet in this chain is due only to the fact that McLuhan

died in 1980, a year before the invention of a personal computer. But he managed to predict many of the changes that the innovation in the field of communication technologies brought to our lives.

Digital or electronic interaction creates new forms of social interaction and replaces physical presence. Digital interaction is no longer subject to laws of any state and is not limited by language or social barriers. New types of micro-communities emerge: small associations of people that are outside geographic and other boundaries. New forms of idea exchange, information control and accounting appear and are implemented. Space «disappears», time «slips away». Multimedia computer equipment and media technology of electro-digital communication era cease to be strictly separated and to some extent merge, integrate. Multimedia becomes an advanced phase in the history of media that links the history and culture of communication [1].

Multimedia is a long history of images, therefore multimedia should be considered as an art, where a special place belongs to visual-spatial ways of transferring information such as computer graphics, animation, video, etc. Multimedia as a form of art with new means artistically expressed but also reflects the artistic content. The new art, which did not find its prospects for implementation in the traditional framework of fine arts, was called «network art» (NetArt) or «cyberculture».

To date, four types of computer art have emerged: computer music, interactive computer performance, computer animation and computer graphics.

NetArt - network art. It includes works created on the Internet, for the Internet, that are exhibited and exist and function on the Web. It differs both from Web-design, artistic page design, and from traditional types of art presented on the Web (museum sites, paintings «posted» on the pages, photographs etc.). One of the main features of the NetArt is the proclaimed focus on communication rather than representation. That means that the artist's Aim is not to impose his own personal vision, but communication - to communicate with the viewer, to involve him in a creative dialogue.

Virtual reality is an artificial reality created using software and hardware. A two-way connection is formed between artificial reality and the person perceiving it. A dynamic model of reality is created by means of three-dimensional computer graphics and provides a user interaction with virtual objects in real time with the effect of his participation in the constructed scenes and events.

Augmented reality is a real-time environment that complements the physical world as we see it with digital data using any devices - tablets, smartphones or others, and the software part. In augmented reality, virtual objects are projected onto a real environment. Virtual reality creates a world where a person can immerse himself, and augmented reality adds virtual elements to the real world. Mixed or hybrid reality combines both approaches.

*Conclusions:* One of the main features of informatization of culture is multimedia, the use of virtual reality and the widespread use of mass communications in all spheres of society. Multimedia should be considered as an art, where a special place belongs to visual-spatial ways of transferring information such as computer graphics, animation, video, etc. Multimedia as a form of art with new means artistically expressed but also reflects the artistic content.

Virtual reality is an artificial reality created using software and hardware. A dynamic model of reality is created by means of three-dimensional computer graphics and provides a user interaction with virtual objects in real time with the effect of his participation in the constructed scenes and events.

*Key concepts:* mediatization, intellectualization, media environment, virtual reality, augmented reality, multimedia.

**Answer the following questions:**

1. What is multimedia?
2. What is computerization?
3. What is mediatization?
4. What is intellectualization?
5. What is different between virtual reality and augmented reality?

6. What multimedia file formats do you know?
7. How does activity virtualization manifest itself?

### **Talking points**

1. Show by examples in which cases multimedia is a means of communication, artistic creation, a type of computer technology.
2. Suggest ways to present multimedia products.
3. Describe the capabilities of multimedia presentations.
4. Show examples of the use of multimedia presentation in the professional work of an art critic.
5. Give examples virtual reality and augmented reality.
6. Basic concepts of multimedia: audio sequence, video sequence, text stream.
7. Presentation methods for multimedia products.
8. Possibilities of multimedia presentations.
9. Using multimedia presentation in the professional activity of an art critic.
10. Explain the features of mediatization in various areas of art history.
11. Show by examples in which cases multimedia is a means of communication, artistic creation, a type of computer technology.
12. Expand the basic concepts of multimedia: audio, video, text stream.

## UNIT 3. TECHNOLOGIES AND MEANS OF PROCESSING GRAPHIC INFORMATION

### **Main issues**

1. The definition and basic tasks of computer graphics. Areas of use.
2. The history of computer graphics development.
3. Types of computer graphics. Raster graphics. Vector graphics.
4. File formats
5. Colour models

**Aim:** to explore the possibilities of using different types of graphics and graphic formats in the study of art, design research and organization of interaction to promote ideas; to learn the on-line graphic program.

Computer graphics refers to using a computer to create or manipulate any kind of picture, image or diagram.

Computer graphics generally means creation, storage and manipulation of models and images.

Computer graphics refers to the creation, storage and manipulation of pictures and drawings using digital computers.

So Computer Graphics it is **different things in different contexts**

Different things in different contexts:

- Pictures, scenes that are generated by a computer.
- Tools used to make such pictures, software and hardware, input/output devices.
- Use of computer to create, store, manipulate, interrogate and present pictorial output.
- Computer graphics is the art/science of producing and manipulating images on a computer.

Computer graphics is the art of drawing pictures, lines, charts, etc. using computers with the help of programming.

Computer graphics is made up of a number of pixels.

Pixel is the smallest graphical picture or unit represented on the computer screen.

There are two types of computer graphics namely. This classification is based on the use of interactive

1. Interactive Computer Graphics (Active):

Interactive Computer Graphics involves a two way communication between computer and user. Here the observer is given some control over the image by providing him with an input device. Example: Computer Games (video game controller)

2. Non-Interactive Computer Graphics (Passive, passive computer graphics.)

Here the user does not have any kind of control over the image. The image is totally under the control of program instructions not under the user. Example: screen savers, images.

Applications Computer Graphic:

- Digitization of images in computer graphics;
- visualization of computer data;
- carrying out activities with the image (creation, editing, etc.).

Computer Graphic used in diverse fields to represent data. Scientific researches, engineering applications, medicine, business, industry, government, art, entertainment, education and other fields make use of computer graphics. It enhances the communication between computers and users.

The main applications of computer graphics are:

Scientific graphics

Business graphics

Graphic design

Illustrative graphics

Computer animation

Web graphics

Computer games

## Virtual reality systems

Business graphics – is computer graphics, designed to visualize the various indicators of the institutions. The purpose of business graphics – is creating illustrations that are often used in the work of various institutions. Targets, reporting documentation and statistical reports – all these objects use with the help of business graphs illustrative materials. Numerical data are presented graphically. While line charts, bar charts, and pie charts are common forms of business charts, there are dozens of other types. The ability to create business graphics is often included in spreadsheet and presentation programs. (Figure 3.1).

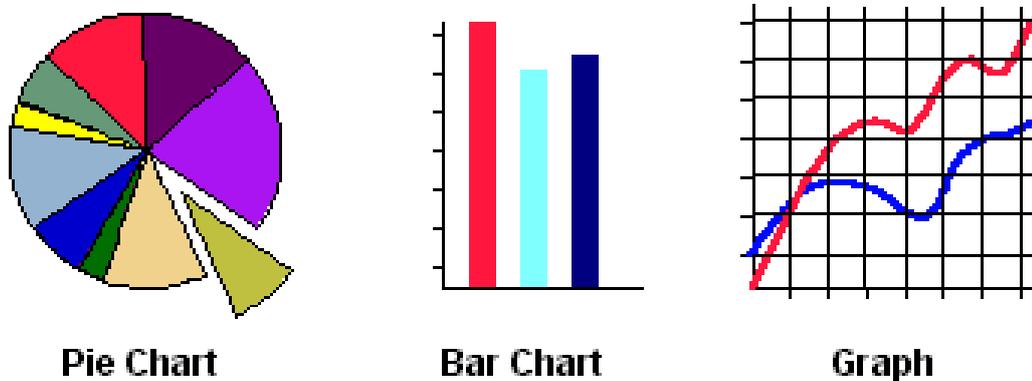


Figure 3.1 – Business graphics

**Scientific graphics** appeared first. The first computers were used only for solving scientific and industrial problems. To better understand the results obtained, they were processed graphically, built graphs, diagrams, drawings of the calculated structures. The first graphics on the machine were obtained in the mode of symbolic printing. Then special devices appeared - plotters (plotters) for drawing drawings and graphs with an ink pen on paper. Modern scientific computer graphics makes it possible to carry out computational experiments with a visual presentation of their results.

The purpose of scientific graphics is a visual representation of objects of scientific research, graphic processing of calculation results, conducting computational experiments with a visual presentation of their results.

**Graphic design** is used in the works of design engineers, architects, inventors of new technology. The purpose of graphic design – is using the design engineers and inventors to create drawings. Computer applications that work in this area were called CAD – computer-aided design.

**Illustrative graphics** are freehand drawings and sketches on a computer screen. The software for illustrative graphics is graphic editors. The software allows to use a computer for drawing, sketching, just as he does on paper, using pencils, brushes, paints, compasses, rulers and other tools, belong to an illustrative diagram

**Computer animation** is creating moving images on the display screen. The word "animation" means "revival". In the recent past, animators have created their movies manually. To send a movement, they had to do thousands of drawings, which differed from each other by small changes. Then they made a copy of these pictures onto film stock.

**Web graphics** are a visual representation used on a website to convey information and attract the attention of a website user.

Development of the Whirlwind computer began in 1945, and the system was first demonstrated on April 1951.

In 1961 Russell led the project to create the first computer game "Space War". It was the first game with graphics.

The first computer graphics design system was developed by Ivan Sutherland as his PhD thesis at MIT in 1963. It was called Sketchpad and allowed a user to sketch a part on a computer screen. Sutherland created a device Sketchpad. It lets you draw points, lines and the circumference of a digital pen. User controls content, structure, and appearance of objects and their displayed images via rapid visual feedback. Basic components of an interactive graphics system input (e.g., mouse, stylus, multi-touch, in-air fingers...) processing (and storage of the underlying representation/model) display/output (e.g., screen, paper-based printer, video recorder...)

A Group of MIT Students built this space wars game in 1966 on mini-computer that used vector display. Some call this the first shooting game ever made.

In 1968 Konstantinov created a computer model of the cat and its moving, which was a breakthrough for that time. The printer used letters and numbers for visualization.

Before 1971 computers had no specific tools for working with graphics.

Graphics were created using programming.

1971-1985 there were personal computers. The user can control the display. A colour image appeared.

1986-1990 Multimedia technology appeared. It derived from the word “Multi” and “Media” Tools that are used to represent or do certain things, delivery medium, a form of mass communication – newspaper, magazine and TV.

Since 1991, virtual reality graphics have been created.

Motion capture allows you to digitize the movements of the actor and use them to control the three-dimensional model of the character. Motion capture is actively used in computer games, animation, and cinema (Figure 3.2).



Figure 3.2 – Motion capture

By the type of image and algorithms for its processing, graphic information is divided into vector, raster, and fractal.

**Vector graphics** are computer graphics created using a series of commands or mathematical operators that place lines and shapes in 2D or 3D space. Images created with tools such as Adobe Illustrator and CorelDRAW from Corel are usually vector image files.

**Advantages of vector graphics:**

Scalability. As previously mentioned, this is the main advantage of vector graphics. Because vector graphics are derived from mathematical vector relationships, or relationships between points that create lines and curves, they appear clean and exact at any size.

Small file size. Vector graphics generally have a small file size because they only store a small number of points and the mathematical relationships between them. Those relationships are expressed in code, which is less memory-intensive compared to storing pixels.

Easy to edit. Vector files are easy to edit because users can change vector relationships fast to swap out colors or change line shapes, for example. This is useful in an iterative process, like graphic design, that requires a lot of editing.

Easy to load. Because file sizes are smaller, it is easy to port and load vector files to different devices and programs.

Easy to duplicate. It is also easy to create clones of a vector image and copy certain features of one graphic to another.

Precision. The ability to scale vector graphics up or down means they have a precise look and feel.

**Disadvantages of vector graphics:**

Less detail. Vector files are limited in dealing with complex images. For instance, photographs require colour shading and blending that vector files cannot provide as well as raster files.

Skill and time requirements. Vector files can require more skill and time to create.

Limited browser support. There is less support for vector graphics on web browsers than for raster graphics.

Inconsistency. Vector images can vary from one application to another, depending on how compatible the rendering and creating applications are, among other factors.

Types of vector files

There are several commonly used vector file types. They include the following:

- .ai -- Adobe Illustrator File
- .cdr -- CorelDRAW Image File
- .dxf -- Drawing Exchange Format File
- .eps -- Encapsulated PostScript File
- .svg -- Scalable Vector Graphics File
- .wmf -- Windows Metafile

**Raster graphics** has origins in television technology, with images constructed much like the pictures on a television screen. A raster graphic is made up of a collection of tiny, uniformly sized pixels, which are arranged in a two-dimensional grid made up of columns and rows. Each pixel contains one or more bits of information, depending on the degree of detail in the image. For example, a black-and-white image contains only one bit per pixel. Most images you see on your computer screen are raster graphics. Pictures found on the Web and photos you import from your digital camera are raster graphics. They are made up of grid of pixels, commonly referred to as a bitmap. The larger the image, the more disk space the image file will take up. File extensions: .BMP, .TIF, .GIF, .JPG.

**Advantages of raster graphics:**

- Simple data structures.
- Overlay and combination of maps and remote sensed images easy.
- Some spatial analysis methods are simple to perform.
- Simulation is easy because cells have the same size and shape.
- Technology is cheap.

**Disadvantages of raster graphics.**

Raster images cannot be scaled up in size very well. If you do try to enlarge a raster image, it will look grainy and distorted. This is because raster images are created with a finite number of pixels.

Raster logos files are often quite large. Raster logo files contain all the information for every single pixel of the image that you are working with. Each of these pixels has an X and Y coordinate as well as colour information associated with it therefore raster graphics files tend to be very large. Also, because these raster images hold so much data, they may be slower to edit.

A colour model is an abstract mathematical model describing the way colours can be represented as numbers, typically as three or four values or colour components. Any method for explaining the properties or behaviour of colour within some particular context is called a Color Model.

Shades, Tints, Tones (Figure 3.3)

A shade is produced by “dimming” a hue. [Adding black].

Dark Blue = pure blue + black

A tint is produced by "lightening" a hue. [Adding white].

Pastel red = pure red + white

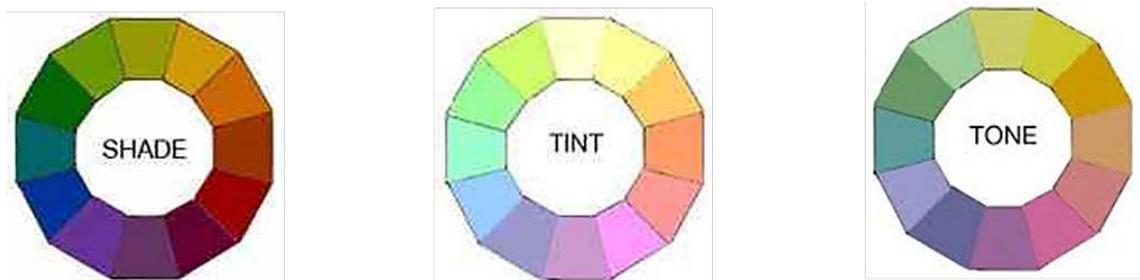


Figure 3.3 Colour model Shades, Tints, Tones

There are some types of color models: subtractive, additive, perceptual.

**The Additive Colour Model** uses light to display colour (Figure 3.4). Mixing begins with a black and ends with white. Used for computer displays.

Example: The RGB colours are light primaries and colours are created with light.

Tone refers to the effects of reducing the "colourfulness" of a hue. [adding gray] or [adding black and white].

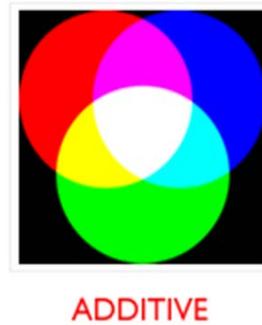


Figure 3.4 – The additive colour model

**The Subtractive Colour Model** uses ink to display colour. Mixing means that one begins with white and ends with black. Used for printed material (Figure 3.5). It is called 'subtractive' because its wavelength is less than the sum of the wavelengths of its constituting colours.

Example: The CMYK colour system is the colour system used for printing.

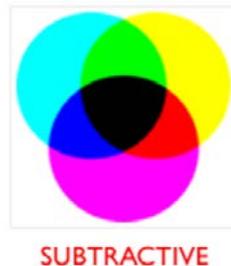


Figure 3.5 – The Subtractive colour model

A perceptual colour model is based on perception. Example: The HSB is the colour system used for users (Figure 3.6).

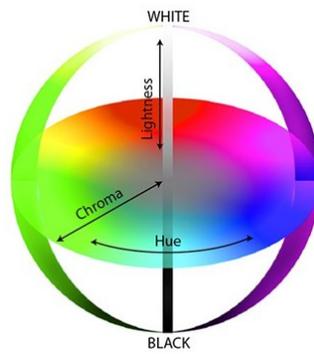


Figure 3.6 – A perceptual colour model

Contrast Important for FG-BG colours to differ in brightness

The RGB colour model is an additive colour model based on the three basic colours Red, Green and Blue. The colours are also called colours of light because the additive colour model creates colours by mixing light (Figure 3.7). The RGB colour model is ideal for digital work, e.g. digital pictures, graphic design, web design, videos. The file formats JPEG, PNG, PSD and GIF are best suited.

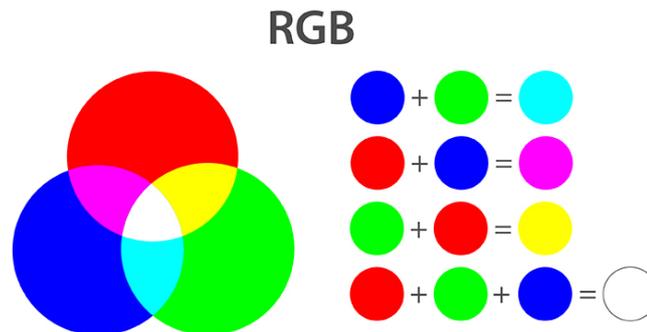


Figure 3.7 – The RGB colour model

RGB is a device-dependent colour model. Our Br24 dark blue, for example, has the RGB value 13, 0, 76. However, the display of this colour tone differs from device to device and depends, among other things, on the device's internal colour settings.

The CMYK colour model is a subtractive colour model based on the three basic colours Cyan, Magenta, Yellow and additionally Key (black). Key originates from the so-called key plate, a printing plate (Figure 3.8). This already shows that the CMYK model is used in the field of printing. The ink absorbs light, which is why the model is called subtractive.

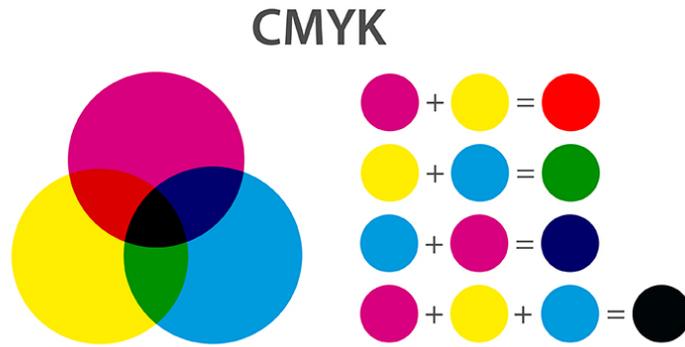


Figure 3.8 – The CMYK colour model

In theory, the mixture of 100% cyan, magenta and yellow results in the colour black. In reality, however, only a very dark brown grey arises. Therefore the key colour black is added when printing. This not only produces pure black but the intensity of grey values and shadows can also be increased. Therefore, black does not equally black in printing. Depending on the ratio in which the three primary colours and the key colour are represented in black, the black appears different.

CMYK comprises far fewer colours than RGB. For example, very bright colours must be printed with special colours. The colour white can only be achieved by the absence or omission of colours or with a special colour in the so-called white printing. CMYK is a prerequisite for four-colour printing and is used, for example, in offset printing (e.g. online printing industry). Creation of print data for printed projects, e.g. business cards, flyers, product packaging, printed T-shirts. The file formats PDF, AI and EPS are best suited.

**Do the exercises**

**3.1. Analysis of the raster, vector and fractal graphics.**

*Methodological recommendations for implementation*

Analyze the possibilities of the raster, vector and fractal graphics. Fill in the table below.

### ANALYSIS OF TYPES OF COMPUTER GRAPHICS

	Raster graphic	Vector graphic	Fractal graphic
The main element of the image			
The change in the quality of the image when scaling (with positive and negative without changing the quality)			
The relation of colour and form (separated or not separated)			
Photorealism (yes, no)			
Formats			
Graphic programs			
Examples of application in the professional activity of a cultural specialist			

### 3.2. Acquaintance with the interface of the online raster editor

#### *Methodological recommendations for implementation*

Raster graphics are images made up of pixels – small coloured squares arranged in a rectangular grid. A pixel is the smallest unit of a digital image. Photorealistic images are created in raster graphics. Raster graphics are very beautiful. Photopea.com – free Photoshop double that runs in a browser (Figure 3.9).



Figure 3.9 – Start window of the Photopea

Photopea interface is identical to Photoshop (Figure 3.10).

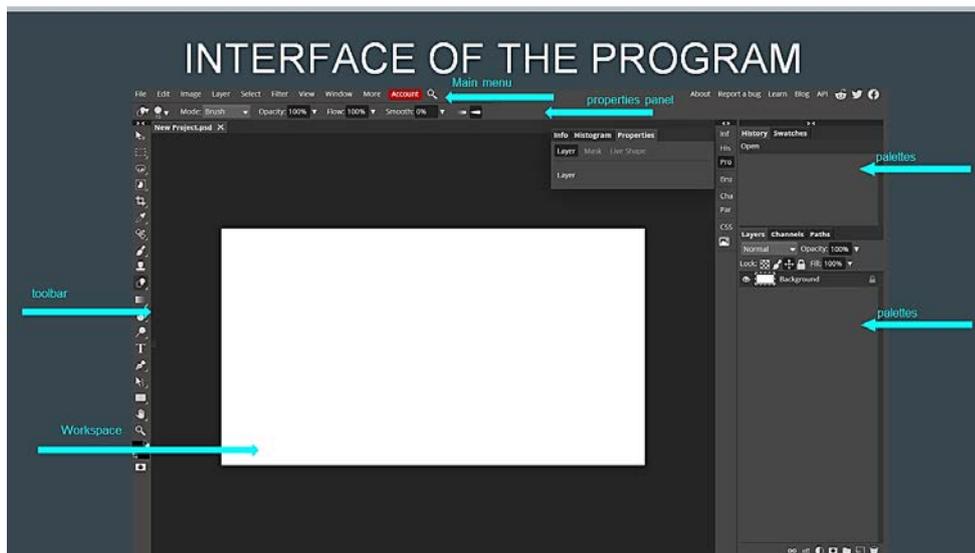


Figure 3.10 – Interface of the Photopea

The program allows you to create and edit graphics. You can create new projects and edit the created images (Figure 3.11).

Photopea supports most of the file formats, from JPG and GIF to PSD. Layers are also supported, so some pretty complex editing can be done in the application if needed (Figure 3.11).

Other Photopea features include layer masks, blend modes, brushes, selections and more (Figure 3.12).

### 3.3 Working with the Templates of editor template

1. Open Templates (Figure 3.11).

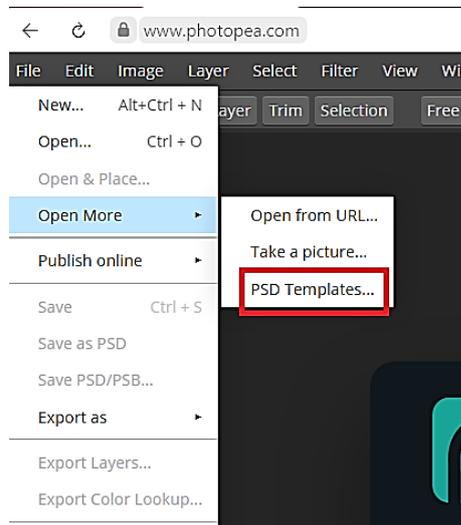


Figure 3.11 – PSD Templates

2. Choose categories Other and select Easter Eggs (Figure 3.12).

Click Open.

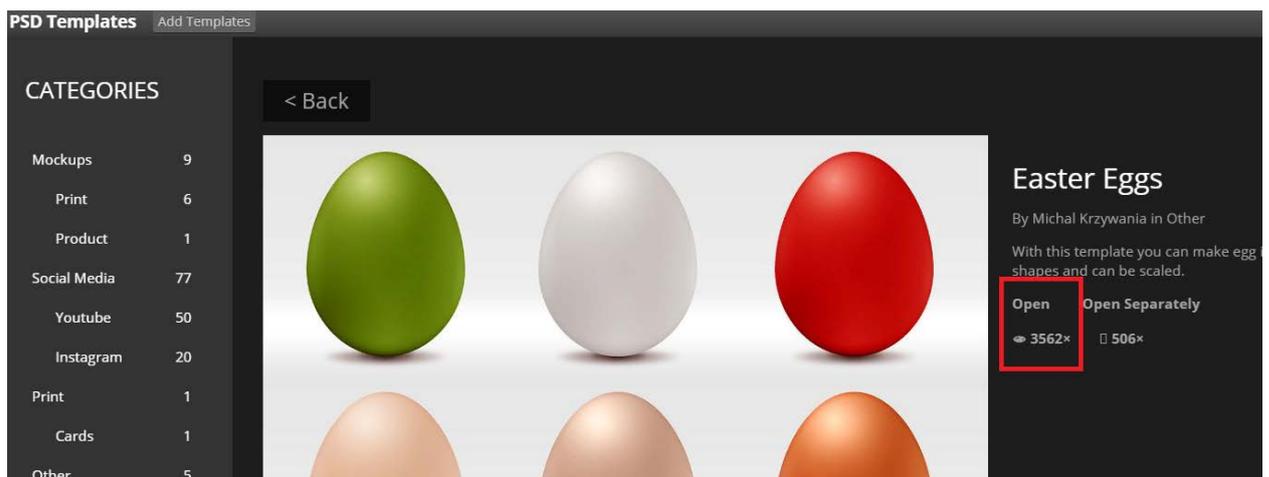


Figure 3.12 – PSD Templates Categories

3. Some layers are disabled. Including layers will get different results (Figure 3.13 and 3.14). Save your image.

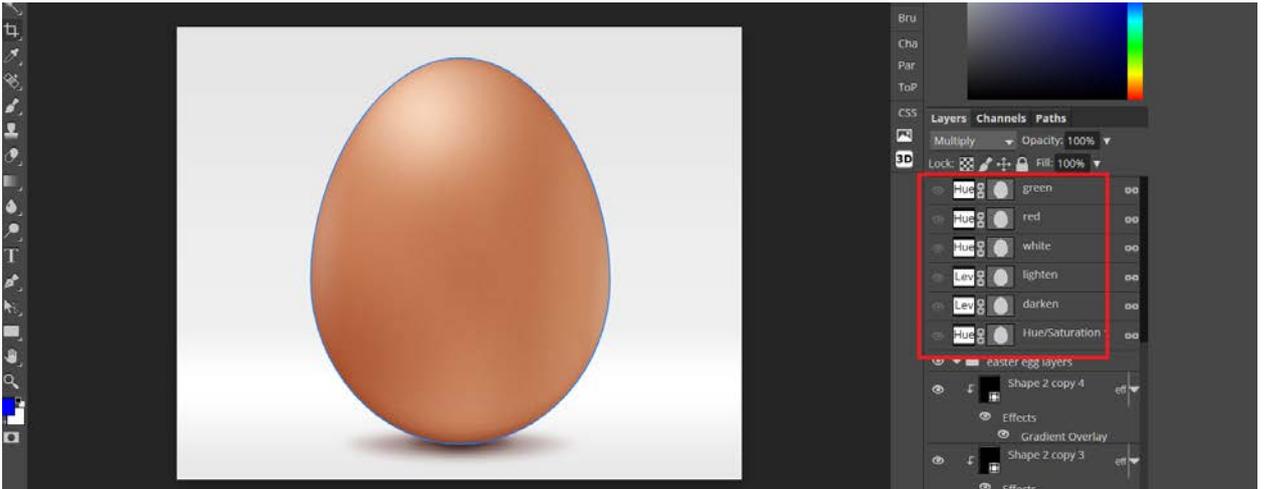


Figure 3.13 – Including different layers

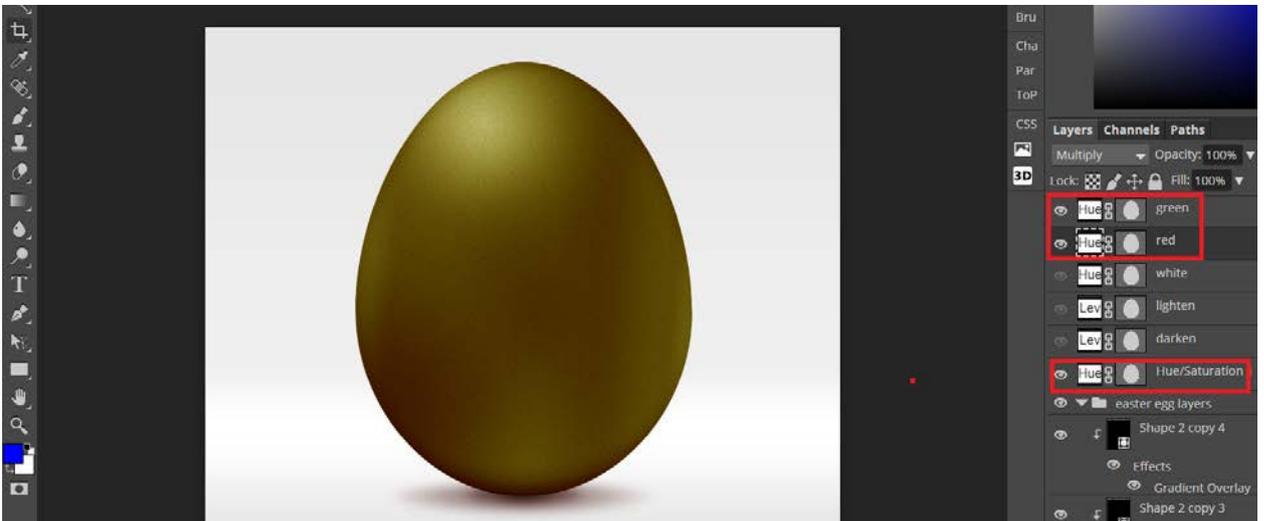


Figure 3.14 – Including different layers

## Vector graphics

### Create Rectangle (R).

To create a rectangle click + drag somewhere on the canvas. Release the mouse button when ready. You can make a perfect square if you hold the SHIFT while dragging. By default, the rectangle will be drawn from the top left corner to the bottom right corner but you create rectangles from the centre if you hold the ALT key while dragging.

If you want to move the rectangle while you are creating it – hold the SPACE key and move to the desired position.

Rectangles have hidden properties that can be controlled with subselect tool (D) – corners. You can control how the corners of the rectangle look. Select the rectangle and hit the ENTER key. You are now in edit mode where you can manipulate the corner radius. Select one of the red control points and drag it toward the centre of the rectangle. All the corners are now rounded. Alternatively, you can change the radius of the corners in the Appearance section of the Inspector panel by moving the Corner slider or by typing a value in the text field next to the slider (Figure 3.15).

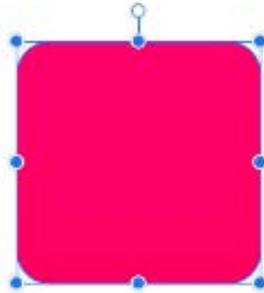


Figure 3.15 – Rectangles properties

### **Create Ellipse (E).**

To create an Ellipse click + drag somewhere on the canvas. Release the mouse button when ready. You can make a perfect circle if you hold the SHIFT while dragging. By default, the Ellipse will be drawn from the top left corner to the bottom right corner but you create Ellipse from the centre if you hold the ALT key while dragging. Ellipse tool allows you to draw fully closed ellipses or circles, as well as truncated ellipses (2), arcs and pie shapes (3) (Figure 3.16).



Figure 3.16 – Ellipse Options

**Make a compound shape.**

Select 2 vector objects: Rectangle and Ellipse.

Use **Modify > Create Compound Shape** (Alternatively: **Create Compound Shape** button in the main toolbar or in the context menu).

Choose from available Boolean operations (Union, Subtract, Intersect or Difference).

You can at any time split Compound shape to its original parts using ungroup command **CTRL + SHIFT + G**. All properties of the original objects will be restored.

A Compound Shapes are non-destructive and can be changed to a different merge operation at a later time using Compound options in the Inspector panel (Figure 3.17).

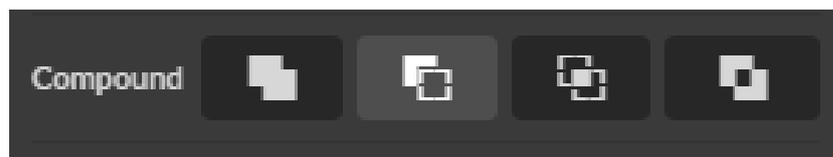


Figure 3.51 – Compound options in the Inspector panel

Create Compound Shape dropdown on the toolbar, or Compound options in the Inspector panel.

Compound shapes are cumulative you can have multiple Boolean operations (Union, Subtract, Intersect or Difference) in one Compound Shape (Figure 3.18).

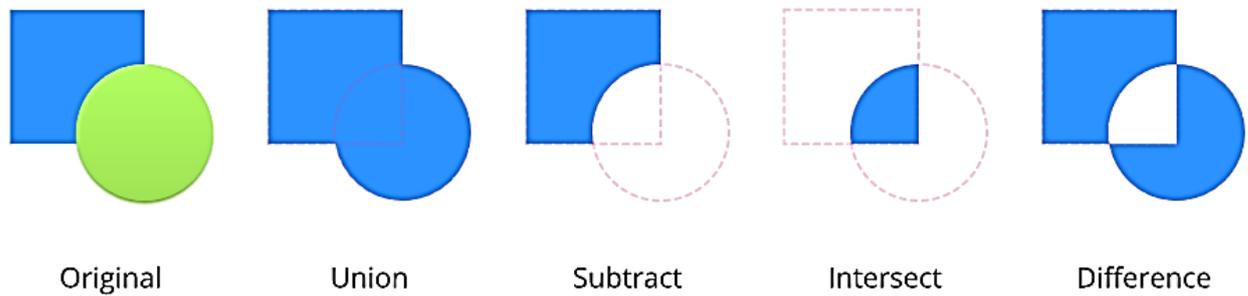


Figure 3.18 – Compound Shapes

### **Create Path (P) and transform Anchor points**

Grab the Pen Tool from the Tool Bar or click Path on the keyboard. Click to set first anchor point that defines the start of the path (1), Click to set second point (2), Go on bringing up more anchor points (Figure 3.19)

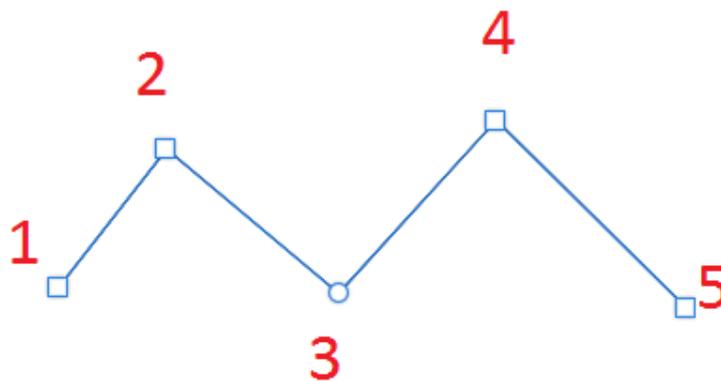


Figure 3.19 – Path

To create a curved line, you must click, hold down the left mouse button and drag to enter Bezier handles at the anchor point and form a curved line (Figure 3.20).



Figure 3.20 – Curved line

To create square 80x80. To select Path. You must click on first point. Then you must click on the second point, hold down the left mouse button and drag to enter Bezier handles at the anchor point. Repeat operations with point 3 and point 4 (Figure 3.21).

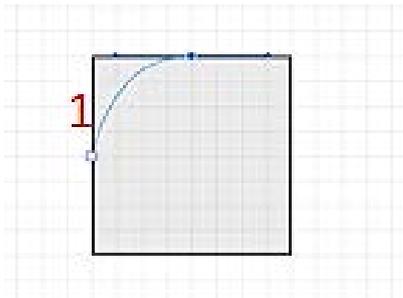


Figure 3.22 – Create Path with curved line

Close loop (Figure 3.23).

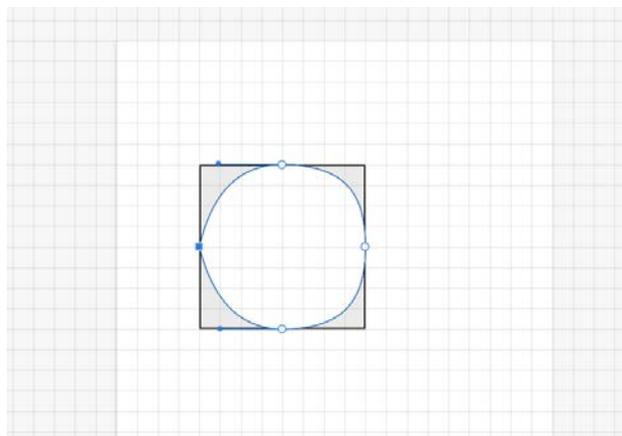


Figure 3.23 – Finished image

### 3.6.2 Design a Business Card

Assign print areas (Figure 3.24):

#### Layout Safe Area

This is the safe area, which means that everything inside this area will appear on the final printed product. This is where all your important content will be.

#### Margin Area

The margins are defined as a safe zone for cutting. Be sure not to leave any important information on the margins and beyond it, because it might be cut out depending on the type of equipment that will be used.

#### Bleed Area

Each print shop uses different equipment and it's not safe to trust only the margins, so we also define a bleed area, which extends a little beyond the margin area. The bleed will be cut out on the final cutting process.

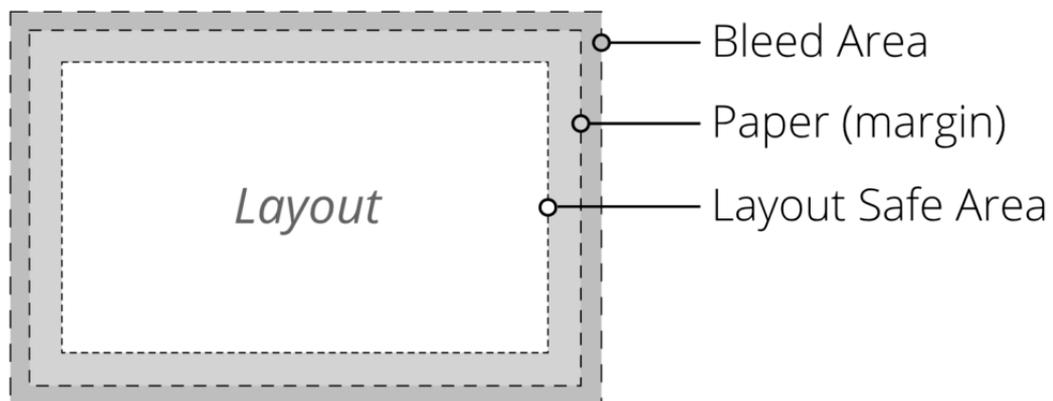


Figure 3.24 – Print Areas

#### 3. Rotating the canvas.

The business card we are designing will be vertical, not horizontal, so let's rotate our canvas. This is done on the Inspector panel, under Page, by clicking the Rotate Canvas. Fill the page with background colour #CAF2F2.

4. Import university photo. Place it at the top center. select the image of the university. Select the Subselect tool and pull the red handles to round the corners (Figure 3.25).

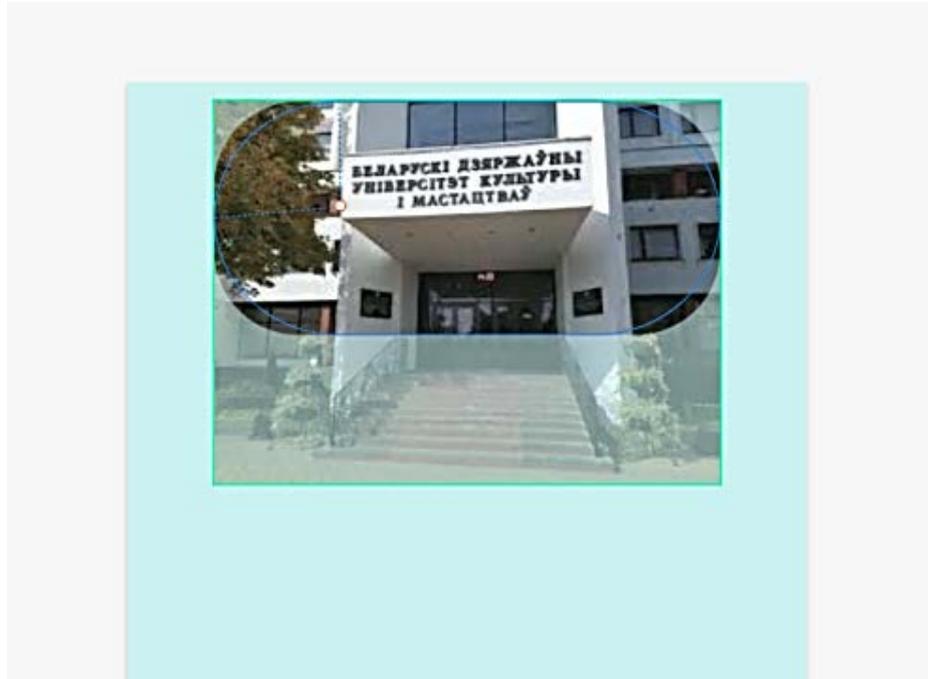


Figure 3.25 – Transform University photo

4. Add Rectangle colour #CAF2F2 border size 2 px and colour #1C5E5E. Move the rectangle layer under the image layer (Figure 3.26).

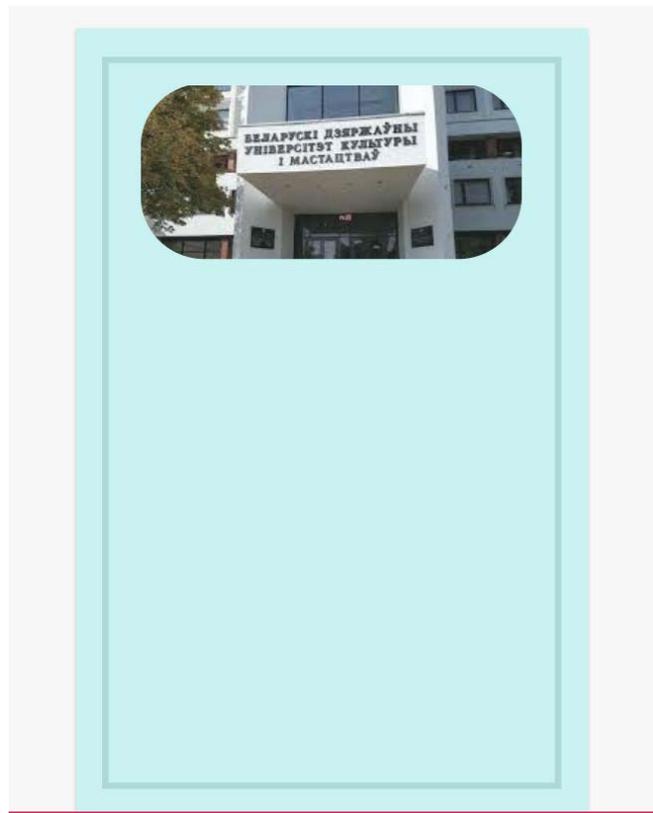


Figure 3.26 – Emblem of Business Card

5. Add text. The business card should contain, in addition to the emblem or logo: your name, what you do, and ways of contacting you, for example, your email. Using the Type Tool (T), add three text boxes and fill them in with your name, status, and email address (Figure 3.27). To add text, simply click with the text tool on the canvas. You can change the size, colours, and fonts in the Inspector panel under Appearance. Add line.



Figure 3.27 –Business Card with text boxes

## 6. Choosing fonts

Gravit Designer has an immense library of Web Fonts for you to choose from. Choose the Web Fonts tab on the fonts menu and navigate through all the fonts using up/down on your keyboard. All Web Fonts on Gravit Designer are free to be used commercially (Figure 3.28).

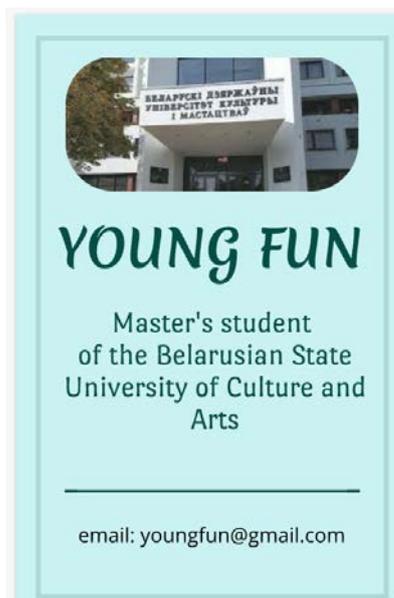


Figure 3.28 –Business Card with deferent type text

## 7. Define the colors

Define a set of colours to be used in your design. If you already have a logo, make sure that the colours you choose for the card match this logo (Figure 3.29).



Figure 3.29 – Finished Business Card

### 3.6.3 Design a Professional Logo in a Vector Graphics Program.

1. Begin your design by creating a new document. Choose File > New Design (Control + N) to open the «New Design». Choose the preset option with 800 pixels wide by 600 pixels high.
2. Choos colour for bagraund #E1E85E.
3. Create Rectangle. Select the rectangle and hit the ENTER key. You are now in edit mode where you can manipulate the corner radius. Select one of the red control points and drag it toward the centre of the rectangle. All the corners are now rounded. Alternatively, you can change the radius of the corners in the Appearance section of the Inspector panel by moving the Corner slider or by typing a value in the text field next to the slider. Choos colour for rectangle #980000. Then creit cope and rotet it. Then make a copy of the rectangle and rotate it 90 degrees move down to the start of the first rectangle and increase the length (Figure 3.30).

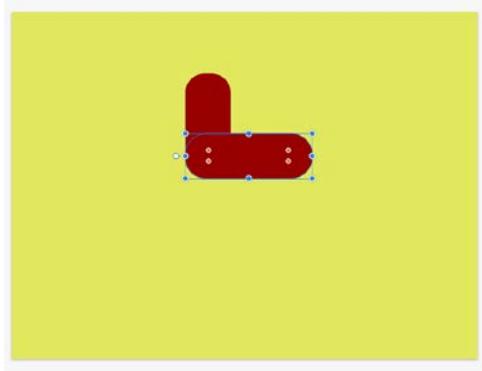


Figure 3.30 – Toucan body

5. Create a toucan eye using two gray and black ellipses (Figure 3.31)

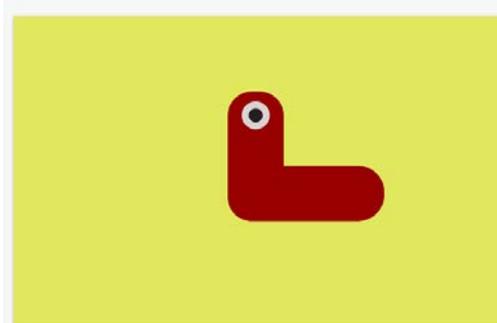


Figure 3.31 – Toucan body with eye

6. Create a toucan beak. To do this, create an orange rounded rectangle and a brown ellipse. Rotate ellipse. Select both shapes and create mask for an object. Click twice to edit the clipped object. Move this layer down (Figure 3.32).

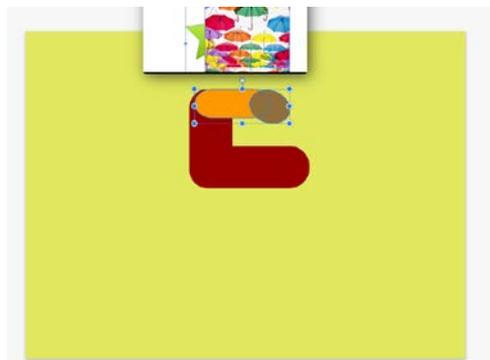


Figure 3.32 – Toucan body with beak

7. Create a line, select subselect tool and round it. Apply a stroke, undo the fill. Move this layer up (Figure 3.34).

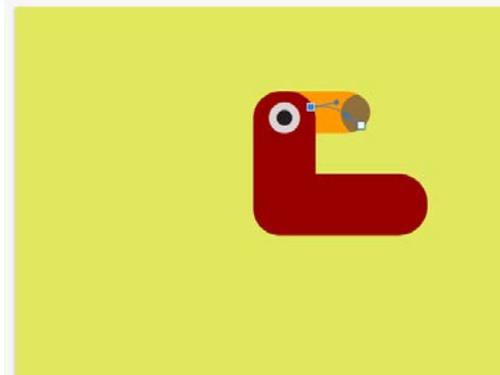


Figure 3.34 – Toucan body with beak

8. Create wing. To do this, create two rounded rectangles of different green colors. Select the second rectangle. In the Inspector, uncheck the Uniform Corners and make two of them straight (Figure 3.35). Create a rectangle overlaid on the previous ones. Apply the command Subtract (Figure 3.36).

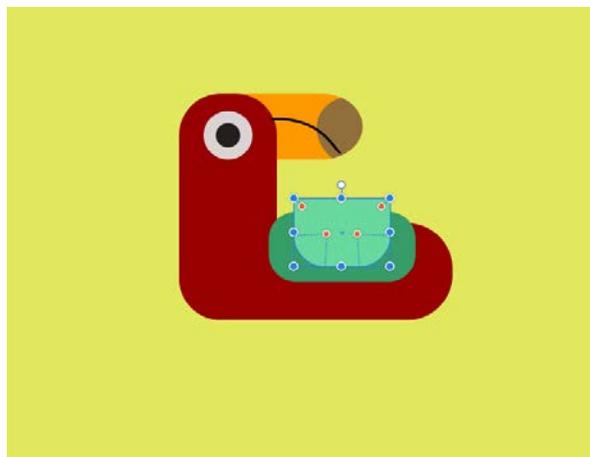


Figure 3.35 – Toucan body with wing



Figure 3.36– Apply the command Substract

9. Add paws and rectangle. Add text. Using the Type Tool (T), add three text boxes and fill them. Select the Web Fonts tab from the fonts menu and navigate to the font type Palette Mosaic. The logo is finished (Figure 3.37)

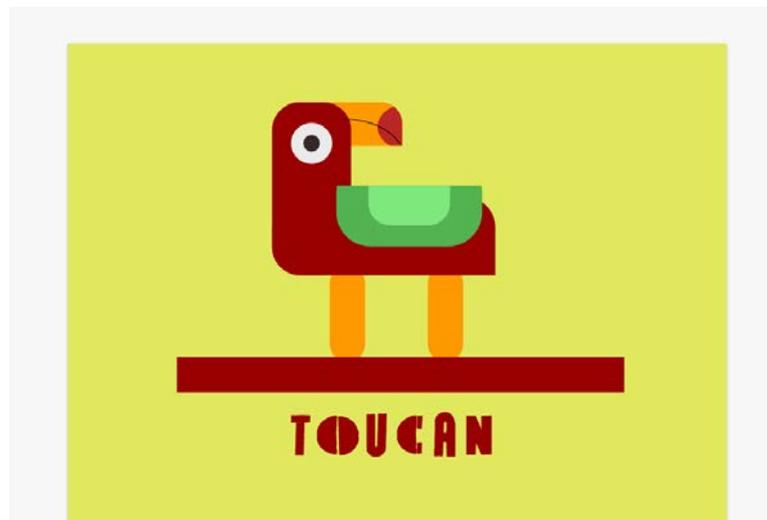


Figure 3.37 – The logo is finished

**Answer the following questions:**

1. What is the scanner?
2. What is Photoshop?
3. What is Word?
4. What is the minimum element of raster graphics?
5. What are the programs for vector graphics?
6. What is the minimum element of vector graphics?
7. What are raster graphics programs?

8. What raster graphics file formats do you know?
9. What vector graphics file formats do you know?

### **Talking points**

1. Give the classification of graphic images. List the main graphic file formats.
2. Visual presentation of data in infographics.
3. Software for working with static graphics (CorelDraw, Adobe Illustrator, AdobePhotoshop, etc.).
4. Software for working with dynamic graphics (3DStudioMax, AdobeIllustrator, etc.).
7. Visual presentation of data in infographics.
8. Software for working with static graphics (CorelDraw, Adobe Illustrator, AdobePhotoshop, etc.).
9. Software for working with dynamic graphics (3DStudioMax, AdobeIllustrator, etc.).

## UNIT 4. COMPUTER TECHNOLOGY IN MUSIC

### Main issues

1. Music creation and processing software. Types of musical computer programs.
2. The use of computer hardware and software in musical creativity.
3. Music on the Internet. Streaming and static music
4. Internet audio file formats.
5. Bitrate. Placement of audio files on the Internet.

**Aim:** Learn to work with sound using built-in computer resources and cloud services.

A headset can be an essential tool for communication, particularly when working from home, where you may need to block out surrounding noise just to get work done. Headsets are also particularly popular with gamers, who require the products to appreciate the atmosphere created by game developers and to speak to fellow teammates.

### *Exercises*

#### **4.1 Checking sound output in Windows 10**

##### *Methodological recommendations for implementation*

1. Left-click the **sound icon** in the taskbar.
2. Select the **sound device** in the drop-down menu.



3. Choose the connected headset.
4. Right-click the sound icon in the taskbar.
5. Select Open sound settings.
6. Choose Sound control panel on the right.
7. Select the headphones (should have a green tick).



8. Hit Properties. (You can rename this sound output right here to make it easier at switching.)
9. Select the Advanced tab.
10. Hit the test button".

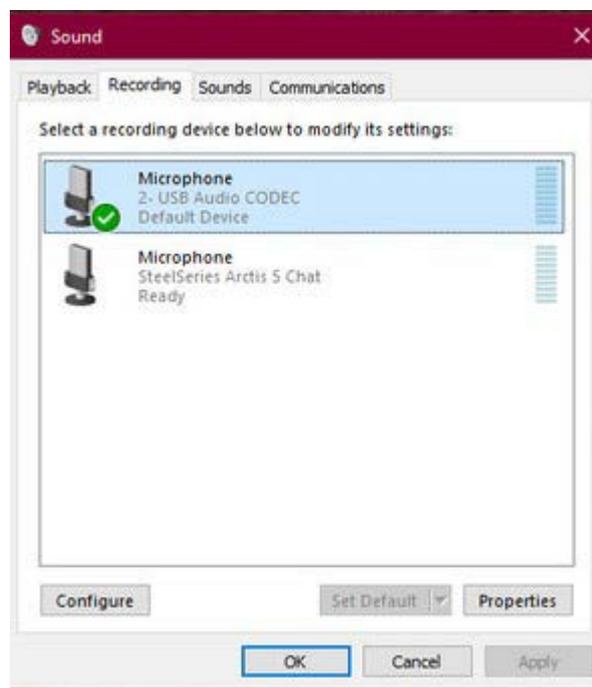
11. If you hear sound through the headphones, you're good to go. If not, check if you have the correct device selected for sound output, and that the headset itself is plugged in (we've all be in the position where something doesn't work because it isn't physically connected).

## 4.2 Recording your own voice

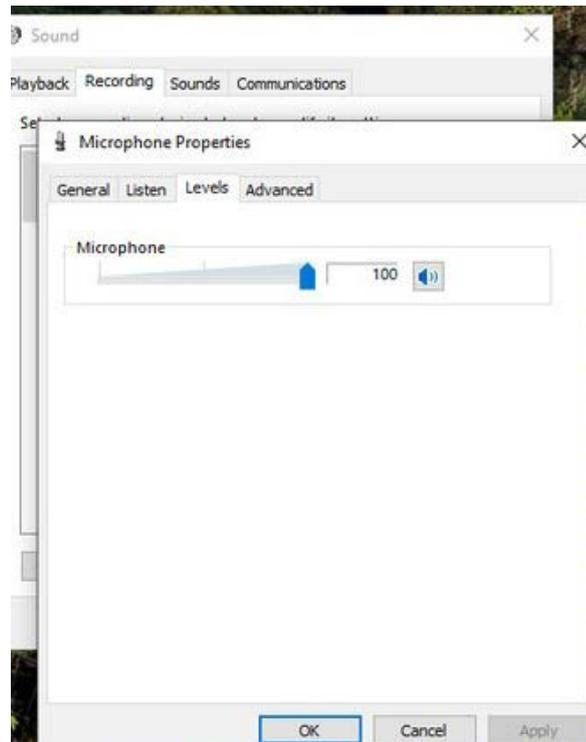
### *Methodological recommendations for implementation*

After that, we need to select the microphone as the default input device and make sure the volume is turned up. To do this, we run through similar steps carried out for the headphones.

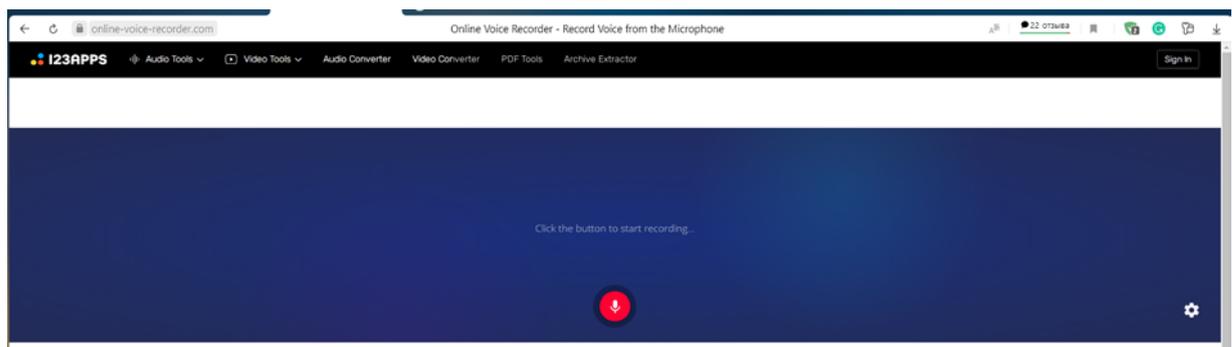
1. Right-click the **sound icon** in the taskbar.
2. Select **Open sound settings**.
3. Choose **Sound control panel** on the right.
4. Select the **Recording**.
5. Choose the **microphone**.



6. Hit Set as default.
7. Open the Properties window.



8. Select the Levels tab.
9. Adjust the volume accordingly.
10. Load <https://online-voice-recorder.com/> and create a personal account.
11. Think over and create audio text
12. Apply settings and save the audio file to the cloud.



### **4.3 Analysis of music Internet resources in various genres.**

#### *Methodological recommendations for implementation*

1. Analyze 5 music services like Spotify, Spotify, Apple Music, Google Play Music, YouTube Music, Deezer, Tidal, SoundCloud and more.

2. Make a comparative table according to the following criteria: simplicity of the interface, speed of work, usability, compatibility with devices, offline mode, the ability to download your own music, the presence of texts, the number of pieces of music, genres. Indicate the advantages and disadvantages.

## UNIT 5. TECHNOLOGIES OF DYNAMIC GRAPHICS: VIDEO PROCESSING

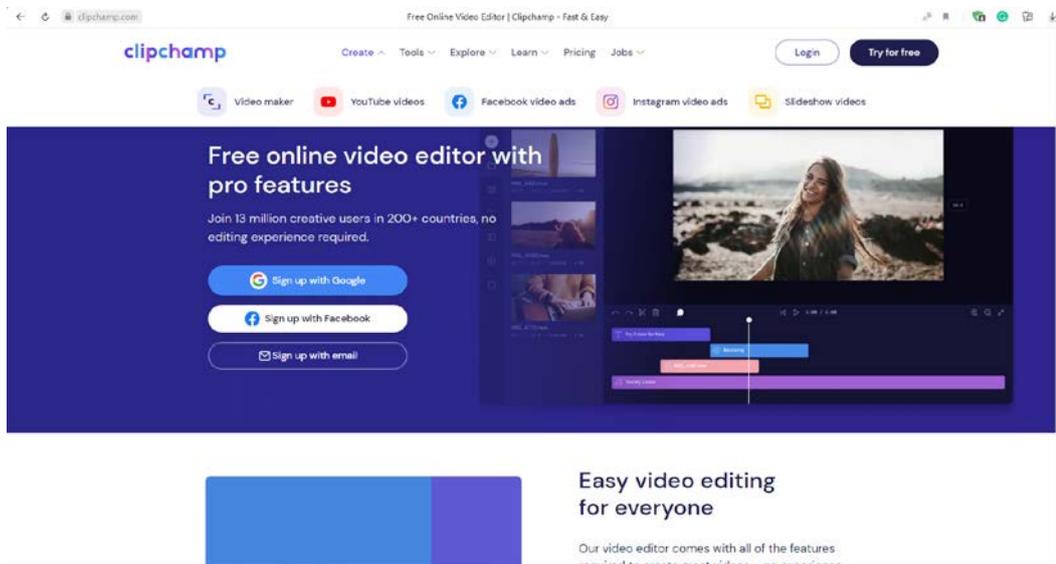
*Aim:* Create a video about an artist or work of art using an online video creation and processing

*Exercise*

**5.1 Create a video about an artist or a work of art using the service <https://clipchamp.com/en/>.**

*Methodical recommendations for implementation*

1. Open in browser <https://clipchamp.com/en/>, use a Google account or register



2. Get started with these slideshow video essentials. Start a slideshow by uploading your media

Open up Clipchamp and start by selecting from the available video templates or by creating a new video project from scratch. Once you're inside the editor, browse through files and add your photos and clips to the media library.

3. Add a music track to your slideshow

In addition to your visuals, upload your audio files to the editor and drag and drop it to your timeline, right below the images and clips. There are extra tracks on

the timeline for audio, so there's ample space for both your background music and voice over.

#### 4. Apply filters to create movement

Give your slideshow a cinematic feel by applying dynamic moving filters. Simply select an image from your timeline, browse through the available filters and select your favourite to use the effect.

#### 5. Trim and sync your visuals and audio together

Set your slides to the tune of your background music by aligning them on the timeline. The preview area on the right-hand side shows you the playback timing of your slideshow video.

## **UNIT 6. METHODS AND MEANS OF FINDING INFORMATION ON THE GLOBAL INTERNET**

### **Main issues**

1. The Internet. Basic concepts.
2. Information retrieval systems. Basic search rules.

**Aim:** Introduction of the main methods and means of information search on the Internet.

The Internet is a global information system that unites many local, regional and corporate networks. It includes tens of millions of computers that are logically connected using a global unique address space based on the Internet Protocol (IP) and its subsequent extensions. The Internet can communicate using the Transmission Control Protocol / Internet Protocol (TCP / IP) [18].

Hundreds of millions of network users can connect to Internet servers using local area networks or dial-up telephone lines.

1969 October 29 - the first long-distance computer communication session occurred between the University of California Los Angeles (UCLA) and the Stanford Research Institute (SRI) – a distance of 640 km. Both nodes were connected to the ARPANET network.

1971 – The first e-mail program for the ARPANET is developed.

1973 – The first foreign organizations from Great Britain and Norway are connected to the network via a transatlantic telephone cable. The computer network became international.

1983 – ARPANET switched from NCP protocol to TCP / IP, consequent the term "Internet".

1988 – the Internet Relay Chat (IRC) protocol was developed. It allowed to exchange messages in real time (chat).

1989 – the concept of the World Wide Web first appeared. Tim Berners-Lee, a British scientist, developed the HTTP protocol, HTML language and URI (Uniform Resource Identifier).

1990 – First dial-up Internet connection.

1991 – The first Internet browser – NCSA Mosaic.

The main services of the Internet:

Electronic mail (e-mail) – offline electronic communication service;

World Wide Web (WWW) – technology of preparation and posting of documents on the Internet.

- Blogs,
- Web forums,
- Wiki projects,
- Online auctions and shops,
- Social networks and dating sites [1].

All services provided by the Internet network can be grouped into two categories: the exchange of information between network subscribers and the use of a network databases.

Almost all services of the Internet are built by the client-server principle. A server is a computer or program capable of providing some network services to clients upon requests.

Client programs include browsers – programs for viewing Web-servers; ftp-clients; telnet-clients; mail-clients; WAIS-clients; E-mail.

Protocol is a set of rules that defines the interaction procedures between users of a computer system (network) and describes how to perform a certain class of functions. TCP / IP are data transfer protocols. TCP (Transmission Control Protocol) determines how information should be split into packets and sent over communication channels. IP (Internet Protocol) is an address protocol. Each data packet contains a computer-sender and the computer-recipient addresses.

World Wide Web (WWW) is the most popular service of the Internet. It is a hypermedia (hypertext) distribution system that stores data on Internet servers, where documents are linked together by links [18].

In 1991, the European Laboratory for Particle Physics in Switzerland (CERN) announced the creation of a new global information environment – the World Wide Web.

HTML is a Hyper Text Markup Language, the markup is performed by tags. Tags provide page formatting elements and allow to place graphics, pictures, hyperlinks, etc. on a webpage. Currently, WWW is a mean of access to virtually all Internet resources.

Hypertext is a term coined by Ted Nelson in 1965 to mean "branching and responding text." Hypertext document contains links to other documents in the form of a network-address of these documents. The standard of hypertext documents allows you to use links to other texts, images, audio and video materials, in other words, any information that can be presented in electronic form.

Browser is a program designed for viewing (browsing) sites on the Internet. It reads the code of a webpage and renders it. The choice of a browser depends on availability of certain add-ons.

The most famous protocols used on the Internet:

HTTP (Hyper Text Transfer Protocol). The HTTP protocol is used to transfer Web pages from one computer to another [28].

FTP (File Transfer Protocol) is used to transfer files from a dedicated file server to a user's computer.

POP (Post Office Protocol). POP servers handle incoming mail. POP is designed to handle mail requests from client mailer programs.

SMTP (Simple Mail Transfer Protocol) is a protocol that defines a set of rules for sending mail. SMTP servers can respond in one of tree of following ways: a receive acknowledgment, an error message, or requests additional information.

Telnet is a remote access protocol. It allows subscribers to work on any computer connected to the Internet, that is to run programs, change the operating mode, and so on.

A resource is any object that belongs to a certain URI (Uniform Resource Identifier) space.

URL (Uniform Resource Locator) is a specific type of URI that identifies a resource by its retrieving mechanism.

URN (Uniform Resource Name) is a specific type of URI that uses the urn-scheme. URN identifiers are assigned within defined namespaces to be available for a long period of time, even after the resource which they identify ceases to exist or becomes unavailable [18].

Information search engine is a system that provides search and selection of the required data in a specific database, and a description of information sources (index) based on the information retrieval language and the corresponding search rules.

Relevance is a measure of matching a found document or set of documents to the user's information needs.

All search engines are similar in a way that they are located on specially dedicated powerful servers and are tied to effective communication channels.

If the basis of the search engine is a directory, the system is called a directory. It is run by a moderator.

The basis of an information retrieval system is automatic collection of information by special programs (“spiders” – automatic directory indexers) that examine the content of Internet resources by visiting each resource periodically. No search engine can index the entire Internet at once. Databases that store addresses of indexed resources are different for different search engines. Nevertheless, many of them strive to cover the entire space of the World Wide Web. These system types are universal in their application.

A search-engine’s work is ensured by three components:

- The spider program analyzes resources and indexes them.

– Search engine indexes form their own databases created by the search engine.

– A program that prepares a response in accordance with the user's request based on the analysis of its own databases (indexes).

The user only works with the third program.

WORLD SEARCH ENGINES (POPULAR RATING): Google, Yahoo, Bing, Baidu, Yandex, etc. Refine web searches (GOOGLE) ([support.google.com](http://support.google.com))

You can use symbols or words in your search to make your search results more precise. Google Search usually ignores punctuation that isn't part of a search operator. Don't put spaces between the symbol or word and your search term. A search for **site:nytimes.com** will work, but **site: nytimes.com** won't.

For refine image searches use Overall Advanced Search. For that go to Advanced Image Search. Use filters like region or file type to narrow your results. At the bottom, click Advanced Search.

To search for an exact image size, right after the word you're looking for, add the text `imagesize:widthxheight`. Make sure to add the dimensions in pixels. Example: `imagesize:500x400`

To search for a social media account put @ in front of a word to search social media. For example: `@twitter`.

To search for a price put \$ in front of a number. For example: `camera $400`.

To search hashtags put # in front of a word. For example: `#throwbackthursday`

To exclude words from your search put – in front of a word you want to leave out. For example, `jaguar speed -car`

To search for an exact match put a word or phrase inside quotes. For example, `"tallest building"`.

To search within a range of numbers put .. between two numbers. For example, `camera $50..$100`.

To combine searches put "OR" between each search query. For example, `marathon OR race`.

To search for a specific site put "site:" in front of a site or domain. For example, site:youtube.com or site:.gov.

To search for related sites put "related:" in front of a web address you already know. For example, related:time.com.

To see Google's cached version of a site put "cache:" in front of the site address.

Search engine sites provide help-links to information on the use of search services, query languages, search recommendations, etc.

*Conclusions:* The main task of any search engine is to find information relevant to user's needs. To improve your online searches use advanced queries and special search operators.

*Key concepts:* Internet, information search engine, search operators, extended queries.

## **UNIT 7. NETWORK (ONLINE) SERVICES IN THE ORGANIZATION OF INNOVATIVE ACTIVITIES IN THE FIELD OF CULTURE**

### **Main issues**

1. Services for storing information on the Web.
2. Services for organizing collaborative work with documents on the Web.
3. Services for organizing video and audio broadcasts and web conferences.
4. Services for creating an information resource on the Web: sites and blogs.
5. Services for making routes and virtual excursions.

**Aim:** The introduction of the main network (online) services, as well as the main directions of their use in the management and marketing activities of a cultural manager.

Online (web) community is a group of people that supports communication and leads collaborative activities with the help of computer network tools [1].

Social networking service is a virtual platform that brings people into online communities with the use of software, computers, networked and networked documents.

Let's consider the main areas of social networking services use when organizing research.

The first area is to use "cloud" services, such as Dropbox, Google Drive, OneDrive, etc to store and share information (text, images, audio, etc.). Access to the posted data can be obtained via internet at any time.

The second area is collaborative work with documents on the Web (Google Docs, OneDrive, etc.). The ability to jointly and simultaneously create, view and edit text, tables and multimedia documents with the display of all changes in real time is very useful for organizing independent collective project activities.

The third area is video and audio broadcasting (YouTube, Smotri.com, etc.) and web conferences (Cisco WebEx, GoToMeeting, etc.). It is convenient to organize consultations, seminars, group projects in the form of web conferences. In

addition to the ability to see and hear the conference participants, there is a possibility to organize collaborative work with the various types of materials.

The fourth area – creating an information resource (Wix, Sites.google, LiveJournal, Blogger, Wordpress, etc.).

The fifth area – routes drawing and organization of virtual excursions (WikiMapia, Google Maps, etc.). Related skillset includes finding and marking locations on a map and provide photographs, comment to them [28].

Network services develop rapidly. This classification has only the main types of social network services that are to be used in the management and marketing activities of a cultural manager.

*Conclusions:* Network services can be used to organize professional or research activities. They allow a group to collaboratively search and store information, create and use media materials, edit and use maps and diagrams; organize collective work on projects, etc.

*Key concepts:* online (web) community, social network service, data storage service, collaborative work services that allow joint work on documents, video and audio broadcasting, web conferences, creating a website, blog, geoservices.

## **Do the exercises**

### **7.1 Using service Google Arts & Culture**

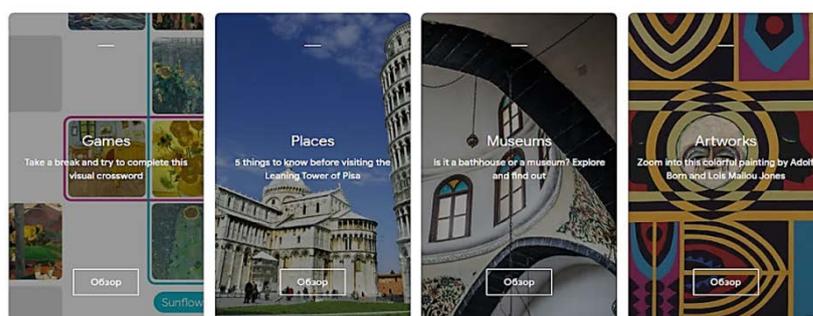
In an art history course, students can explore the Google Arts & Culture site to fuel their own study, represent specific artists, media, or movements in lessons. May use the site to model different styles that students will learn about and apply to their own works of art. Students can take virtual tours of historical sites or museum exhibits related to an event. Additionally, through the timeline options, students can discover art that was made during the same time period all around the world - a useful way to learn about world cultures. May to watch videos or examine artefacts to explore national parks. Regardless of the subject area, teachers can direct students to the site for research that would add to a more complex view

of a time period or area of study. Students may pick a few items on the site and delve deeper into their historical context: Learn more about the Harlem Renaissance after studying a portrait of Langston Hughes. Discover the processes of Japanese woodblock prints after studying colourful artwork made with that method.

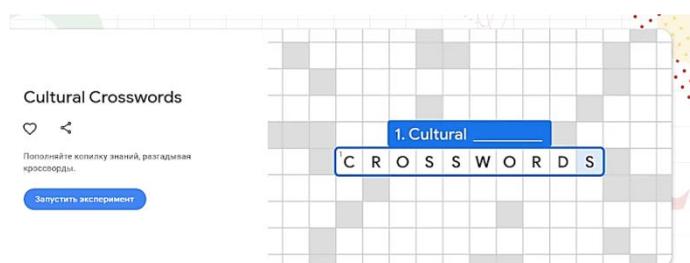
### *Methodical recommendations for implementation*

#### **7.1.1 Create Cultural Crosswords**

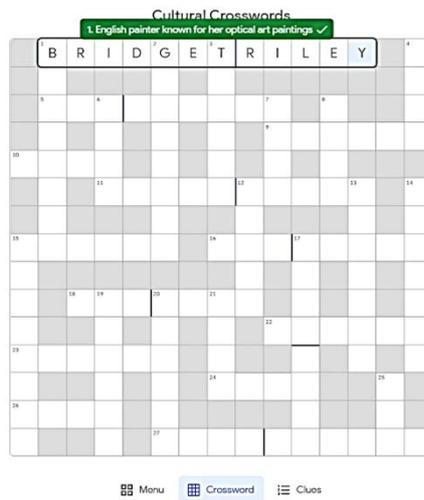
1. Open the service Google Arts & Culture
2. Choose section games



3. Choose Cultural Crosswords
4. Start an experiment. You must complete the crossword puzzle



5. Click on the cell with the number. You will see the question. Enter your response

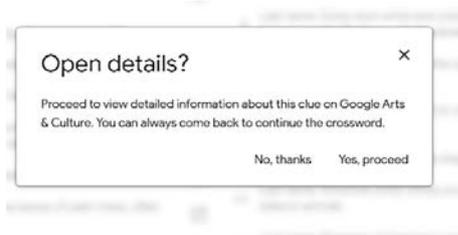


6. If you find it difficult to answer go to the icon for information about this question.

Across	Down
1 English painter known for her optical art paintings ✓ <input type="checkbox"/>	1 Last name. American artist who fuses graffiti, pop art and text in his work <input type="checkbox"/>
5 American artist known for his wall drawings and "structures" <input type="checkbox"/>	2 Picasso's powerful portrayal of the horror of war <input type="checkbox"/>
9 Genre of Japanese art featuring woodblock prints and paintings <input type="checkbox"/>	3 Small bits of information, e.g., about an artist's life <input type="checkbox"/>
10 Radiant light in a painting, also known as a halo <input type="checkbox"/>	4 Last name. Swiss-born artist and color theorist who lectured at the Bauhaus with Kandinsky <input type="checkbox"/>
11 Artist with the most iconic eyebrows <input type="checkbox"/>	6 A thin sheet of metal applied on the surface of artworks such as 18-Across <input type="checkbox"/>
15 Goddess of wisdom in Greek Mythology <input type="checkbox"/>	7 Saltwater fish depicted in one of 24-Across' latest masterpieces, in 1967 <input type="checkbox"/>
16 Australian sculptor known for his hyperrealistic depiction of the human body <input type="checkbox"/>	8 Action that turns an outline into a shape <input type="checkbox"/>
18 Klimt's golden masterpiece <input type="checkbox"/>	12 Last name. American artist whose sculptures include balloon animals <input type="checkbox"/>
22 Fiber originated from the leaves of palm trees, often used in African textiles <input type="checkbox"/>	13 Last name. Pioneer of American modernism known for paintings of enlarged flowers <input type="checkbox"/>
23 Copies of paintings, abbr. <input type="checkbox"/>	14 Last name. Painter of 9-Across known of his great wave <input type="checkbox"/>
24 Last name. Spanish painter with a surrealist mustache <input type="checkbox"/>	15 Modern art movement propelled by Kandinsky, Pollock, Miro, etc <input type="checkbox"/>
26 One of the four primary colors in printing <input type="checkbox"/>	
27 Pioneer in Pop Art and close friend of 1-Down <input type="checkbox"/>	

Menu   
  Crossword   
  Clues

7. Confirm going to details



8. Take a screenshot after each task

### 7.1.2 Fill your favourite painting with your colours.

Exercise your talents and get inspired as you colour famous artworks and even landmarks from Street View.

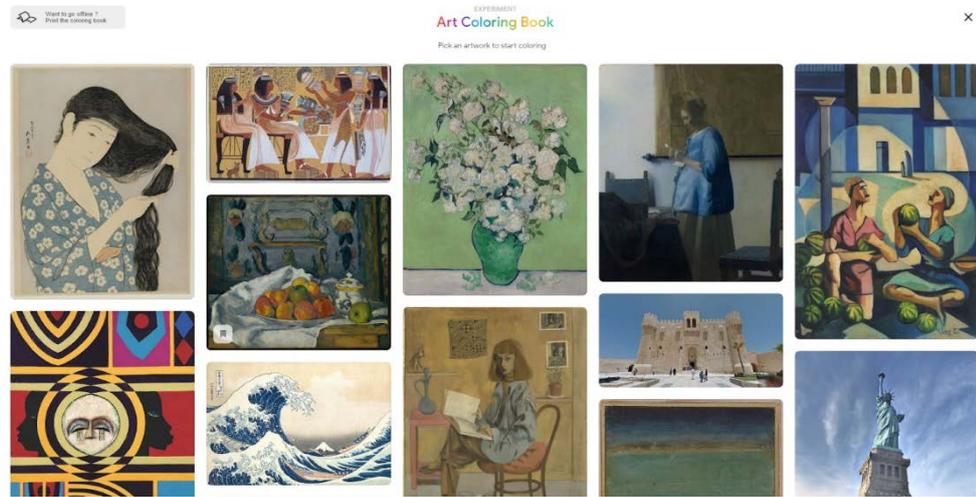
The painting or picture is decomposed in layers and eight dominant colours are presented at the bottom of the colouring page. Unlike a classical colouring book, this one adds depth and perspective elements present in the original artwork as the user colours an area.

This simple colouring tool lets people discover twenty-one famous paintings and monuments in a new way. A flashy, pop palette is also available for the most daring ones to experiment on their own version of the artwork!

1. Open the service Google Arts & Culture
2. Choose section games
3. Choose Art Coloring Book



4. Choose favourite painting. Pick an artwork to start colouring.



5. With Color Hunt, try to look at the colors surrounding you differently and use your environment to reproduce the palette of the artist who painted your most favorite artworks. You can learn more about the artwork and the painter along the way.



The experiment uses a colorization algorithm based on Art Palette which finds 3 to 6 dominant colors in the painting and decomposes it accordingly.

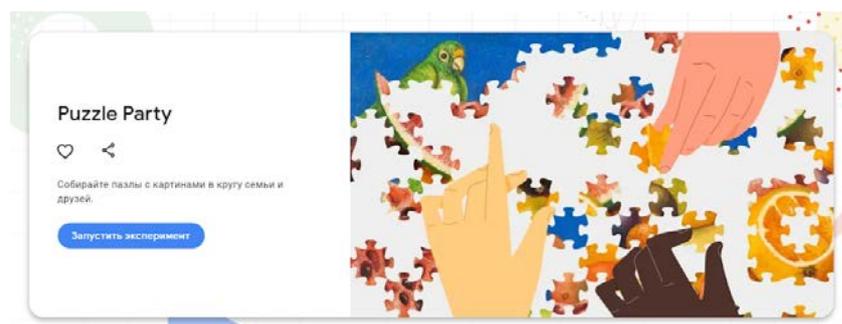
Launch the experiment, pick a painting and capture the colors surrounding you to create your version of the artwork!

6. Take a screenshot after each task.

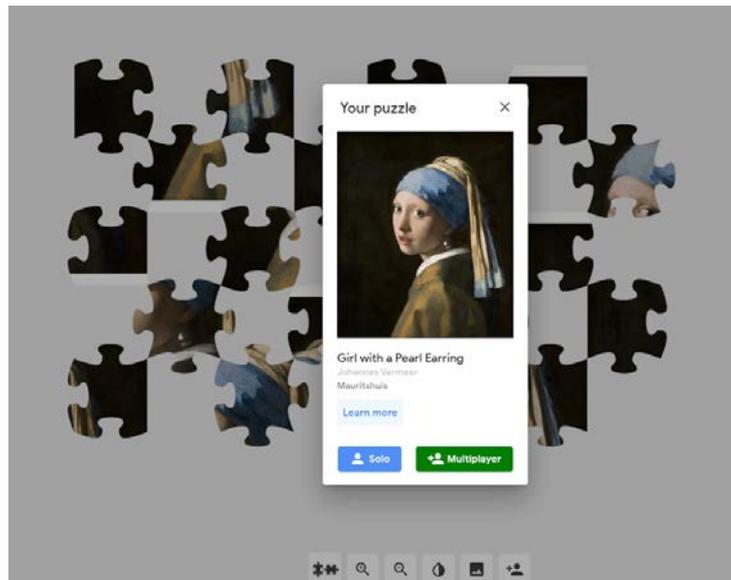
### 7.1.3 Create the puzzle

The puzzle pieces are displayed on the screen as if they were laid out on a regular table. Each player can move the pieces she/he wants to assemble, individually or stuck together as a group. In case the puzzle pieces are too light to be seen against the default background, you can choose to darken the background. At the end, the artworks are revealed in full detail to the players.

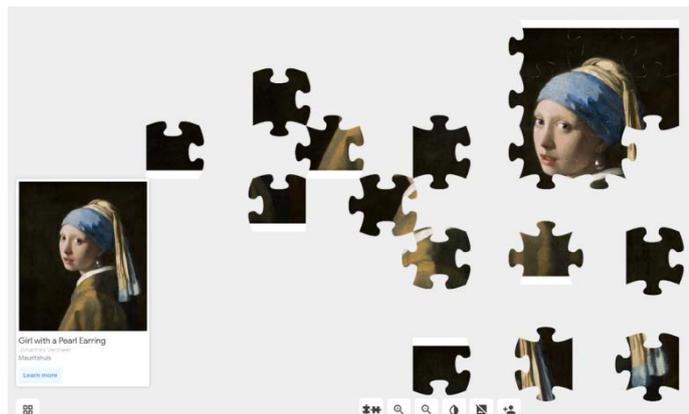
1. Open the service Google Arts & Culture
2. Choose section games
3. Choose Puzzle Party



4. Choose favourite painting



5. Collect the puzzle



6. Take a screenshot after each task.

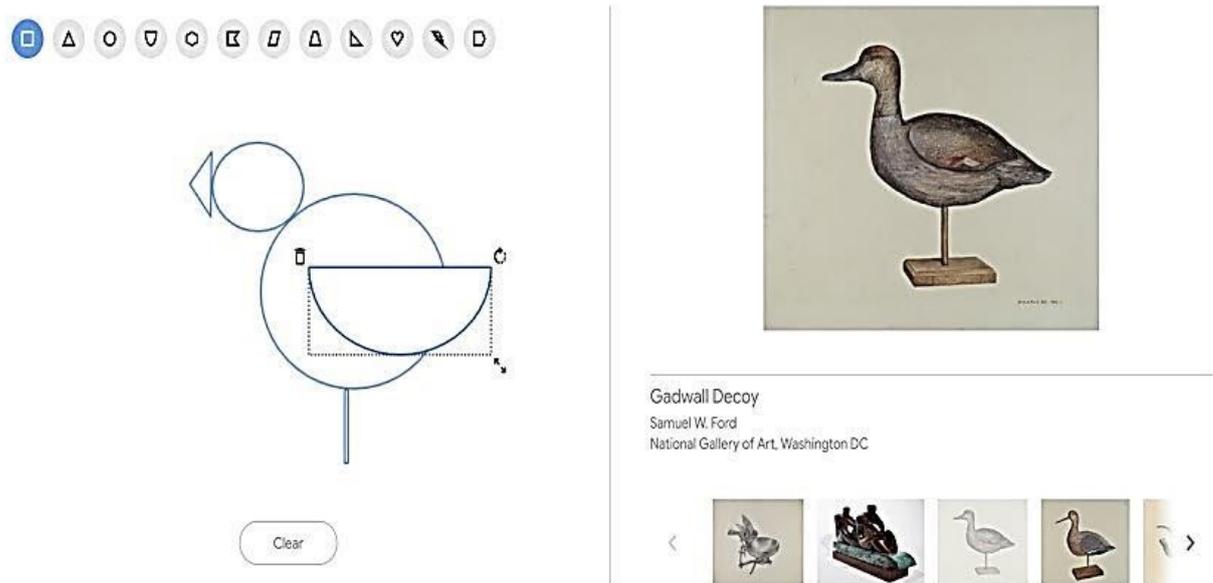
### 7.1.4 Draw to Art: Shape Edition. Sketch and discover inspiring artworks

With Draw to Art, Machine Learning is used to match your doodles to paintings, drawings and sculptures.

Sketch what comes to your mind and explore hundreds of thousands of artworks from museums around the world!

1. Open the service Arts & Culture Experiments  
<https://experiments.withgoogle.com/collection/arts-culture>

2. Create an image from geometric shapes and compare it with the suggested image



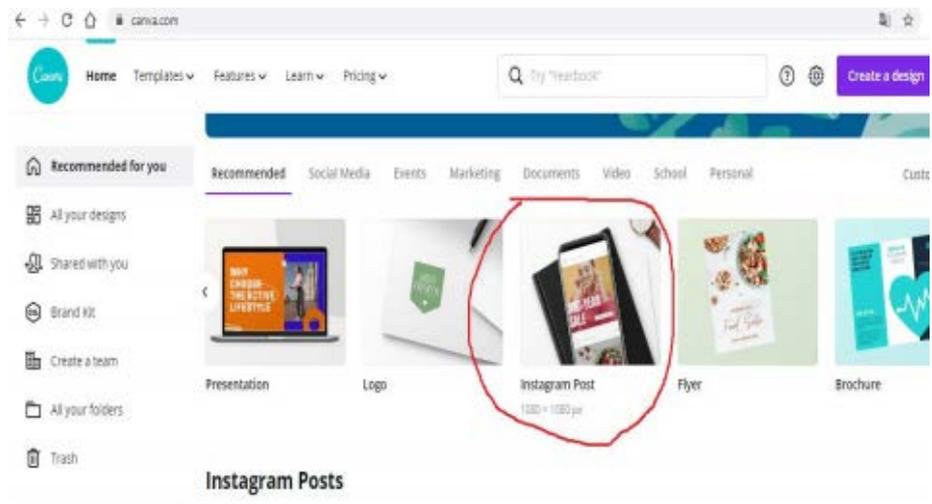
3. Take a screenshot after each task.

## 7.2 Create an invitation for your colleagues and friends to attend your master's thesis defence

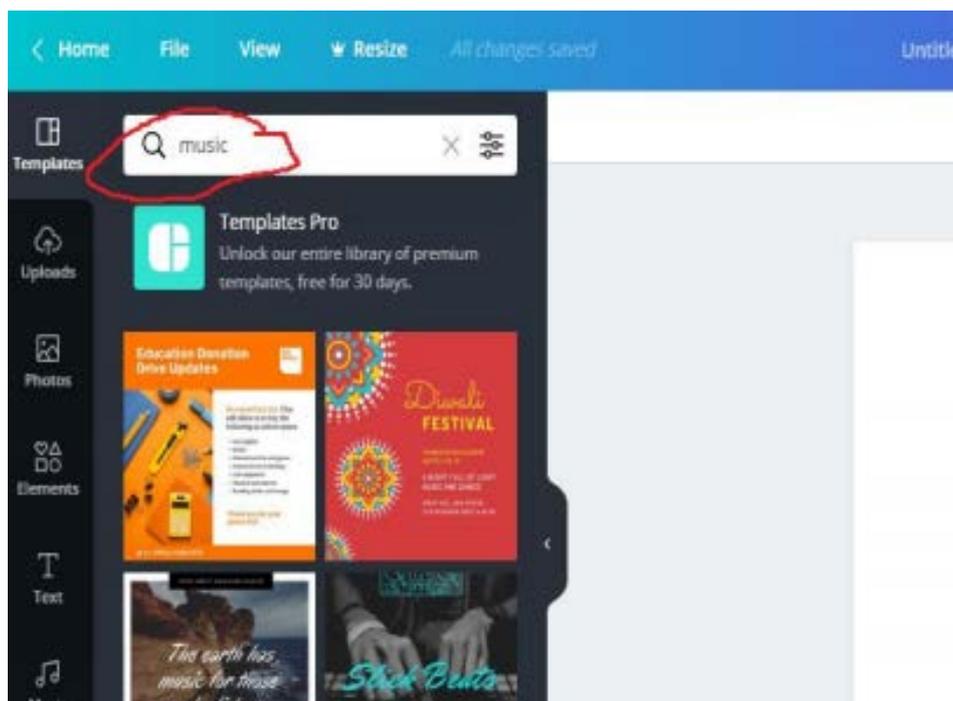
### *Methodical recommendations for implementation*

Canva is a graphic design platform, used to create social media graphics, presentations, posters, documents and other visual content. The app already includes templates for users to use. The platform is free to use and offers paid subscriptions like Canva Pro and Canva for Enterprise for additional functionality. Users can also pay for physical products to be printed and shipped.

1. Load <https://www.canva.com/> and create a personal account.
2. Choose a template. For example, **Instagram Posts**



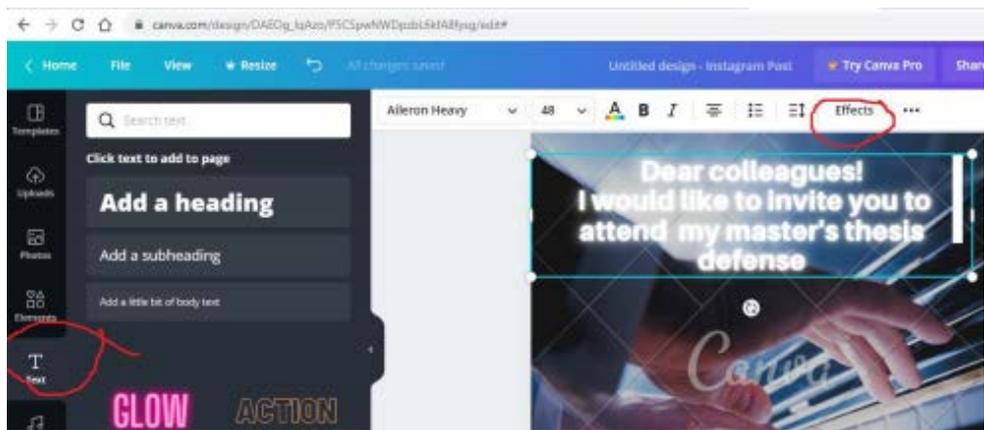
3. Search Photos on the topic you need for the post. For example, MUSIC.



5. With **Text** tools create an invitation title:

**Dear colleagues!**

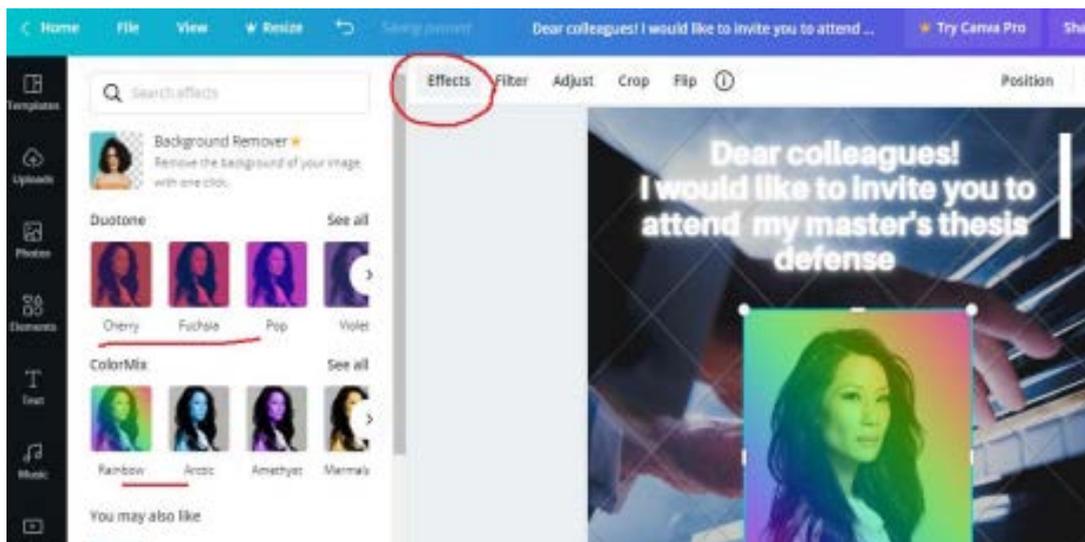
**I would like to invite you to attend my master's thesis defense!**



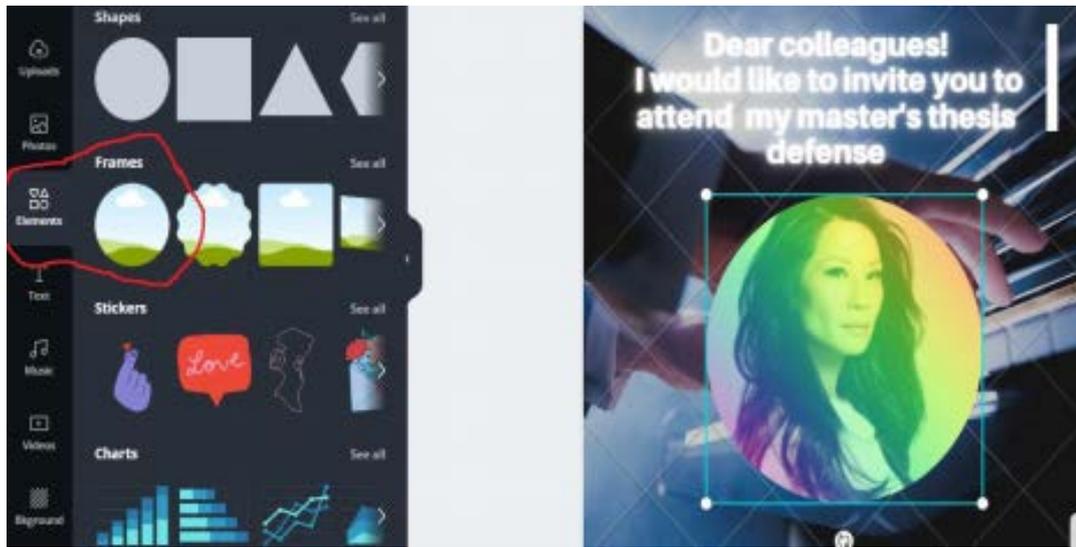
6. Using **Copy** and **Paste** instruments insert your photo on invitation poster



7. With **Effects** instrument add to your photo some effects:

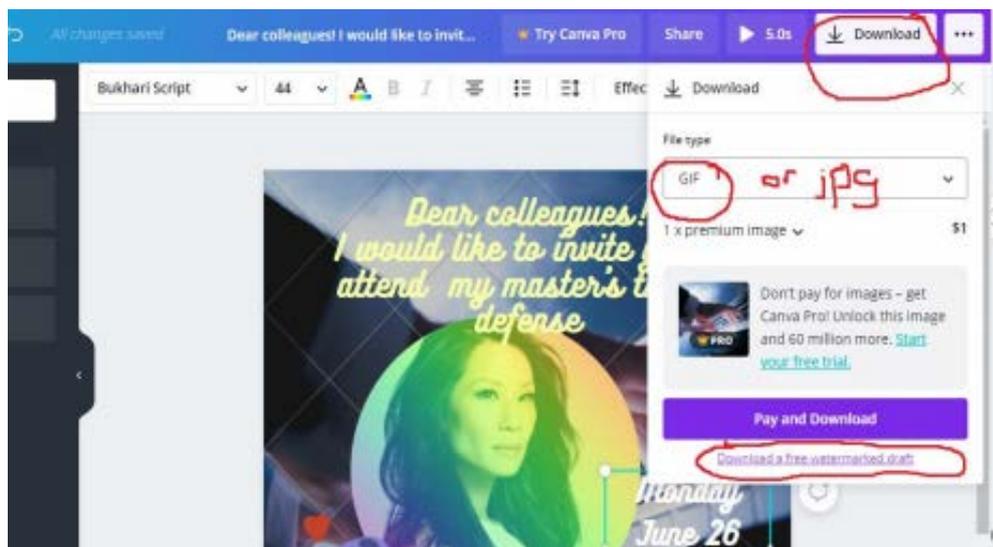


8. Choose a **Frame** from **Elements** and put your photo in the **Frame**



9. Try other instruments.

10. Save the final **INVITATION** in jpg (pdf, gif, png) file, for example, INVITATION\_ **Lucy Liu**. gif



11. Load in GOOGLE CLASS.



### 7.3 Creating presentation quiz

*Methodical recommendations for implementation*

1. Open in browser <https://www.khanacademy.org>
2. Choose the article. EXAMPLE: Address of the article: <https://www.khanacademy.org/humanities/renaissance-reformation/rococo-neoclassicism/neo-classicism/a/kauffmann-cornelia-presenting-her-children-as-her-treasures?modal=1>

Name of the article: Kauffmann, Cornelia Presenting Her Children as Her Treasures

3. Make the screenshot 1 of the text for Quiz

Arts and humanities › Europe  
1300 - 1800 › Rococo and Neoclassicism 18th century › Neo-Classicism

- David, Napoleon Crossing the Alps
- Kauffmann, Cornelia Presenting Her Children as Her Treasures**
- Girodet, The Sleep of Endymion
- Marie-Guillemine Benoist, Portrait of Madeleine
- Canova, Repentant Magdalene
- Canova, Paolina Borghese as Venus Victorious
- Vignon, Church of La Madeleine
- Soufflot, The Panthéon, Paris
- David, The Emperor Napoleon in his Study at the Tuileries
- Practice: Neoclassicism

### A Moment of Moralizing

To the artists of 18th century Europe, it was not enough to simply paint a beautiful painting. Yes one could marvel at your use of colors, proportions, and how masterfully you draped the fabric on your figures, but this was just not enough. The story that is represented must also improve the viewer and impart a moralizing message. This was a common theme even before the emergence of the Neoclassical trend (for example, Chardin's canvases of simple French country life or Hogarth's painted commentaries on the wealthy classes of England). When interest in the ancient cultures of the Mediterranean—more specifically Rome—arose in the mid 18th century the moralizing theme segued to also include stories from classical antiquity.



4. Select Offer from the article:

*The story presented should also enhance the viewer and convey a moral message.*

5. Formulate the Quiz Question:

*The story presented should also enhance the viewer and convey the \_\_\_\_\_ message*

1. advertising

2. moralizing

1. entertaining

6. Make the screenshot 2 of the text for Quiz.

Arts and humanities › Europe  
1300 - 1800 › Rococo and Neoclassicism 18th century › Neo-Classicism

Tiberius and Gaius Gracchus (detail), Angelica Kauffmann, Cornelia, Mother of the Gracchi, Pointing to her Children as Her Treasures, c. 1785, oil on canvas, 40 x 50" (Virginia Museum of Fine Arts)

### An example of virtue

If you compare Kauffmann's simple presentation to the previous Rococo genre, with the lush landscapes, frothy pastel pink frocks, and chubby frolicking cherubs, it is clear that art is going in a different direction. This painting is an exemplum virtutis, or a model of virtue. The story that Kauffmann painted is that of Cornelia, an ancient Roman woman who was the mother of the future political leaders Tiberius and Gaius Gracchus. The brothers Gracchi were politicians in 2nd century B.C.E. Rome. They sought social reform and were seen as friends to the average Roman citizen. So where did these benefactors of the people learn their exemplary ethics? That would be their mother, Cornelia.

Cornelia (detail), Angelica Kauffmann, Mother of the Gracchi, Pointing to her Children as Her Treasures, c. 1785, oil on canvas, 40 x 50" (Virginia Museum of Fine Arts)

The scene that you see in Kauffmann's painting illustrates an example of

7. Select Offer from the article:

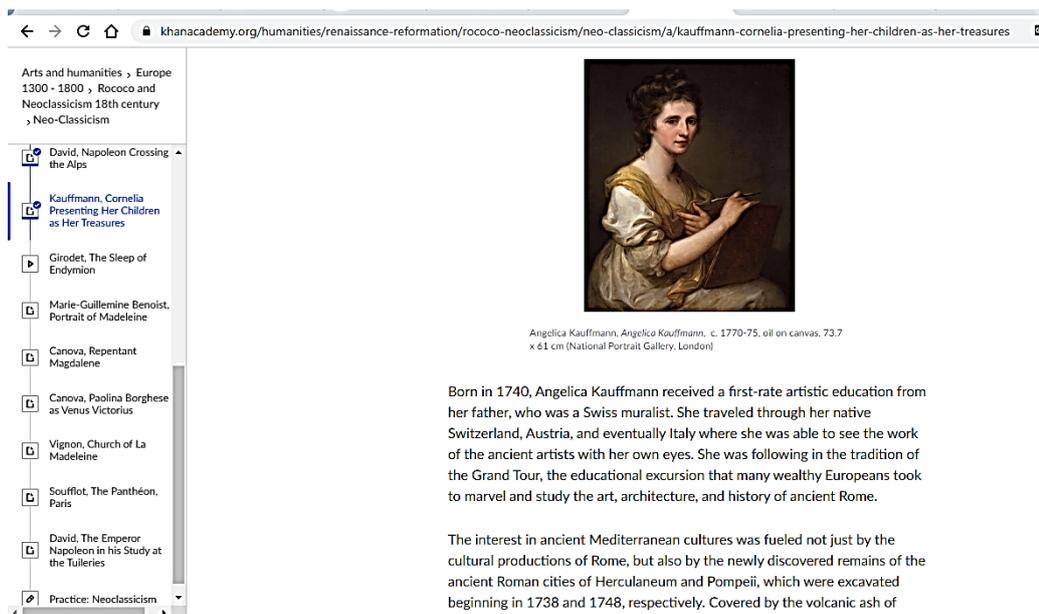
*The story that Kauffmann painted is that of Cornelia, an ancient Roman woman who was the mother of the future political leaders Tiberius and Gaius Gracchus.*

8. Formulate the Quiz Question:

*Kauffmann painted an ancient Roman woman Cornelia, who was the mother of*

1. *Roman political leader Tiberius*
2. *Roman philosopher Seneca*
3. *Roman philosopher Marcus Aurelius*
4. *Roman political leader Gaius Gracchus*

9. Make the screenshot 3 of the text for Quiz.



Arts and humanities › Europe  
1300 - 1800 › Rococo and  
Neoclassicism 18th century  
› Neo-Classicism

- David, Napoleon Crossing the Alps
- Kauffmann, Cornelia Presenting Her Children as Her Treasures**
- Girodet, The Sleep of Endymion
- Marie-Guillotine Benoist, Portrait of Madeleine
- Canova, Repentant Magdalene
- Canova, Paolina Borghese as Venus Victorious
- Vignon, Church of La Madeleine
- Soufflot, The Panthéon, Paris
- David, The Emperor Napoleon in his Study at the Tuileries

Practice: Neoclassicism



Angelica Kauffmann, *Angelica Kauffmann*, c. 1770-75, oil on canvas, 73.7 x 61 cm (National Portrait Gallery, London)

Born in 1740, Angelica Kauffmann received a first-rate artistic education from her father, who was a Swiss muralist. She traveled through her native Switzerland, Austria, and eventually Italy where she was able to see the work of the ancient artists with her own eyes. She was following in the tradition of the Grand Tour, the educational excursion that many wealthy Europeans took to marvel and study the art, architecture, and history of ancient Rome.

The interest in ancient Mediterranean cultures was fueled not just by the cultural productions of Rome, but also by the newly discovered remains of the ancient Roman cities of Herculaneum and Pompeii, which were excavated beginning in 1738 and 1748, respectively. Covered by the volcanic ash of

10. Select Offer from the article:

*Born in 1740, Angelica Kauffmann received a first-rate artistic education from her father, who was a Swiss muralist*

11. Formulate the Quiz Question:

*Kauffmann's father was not*

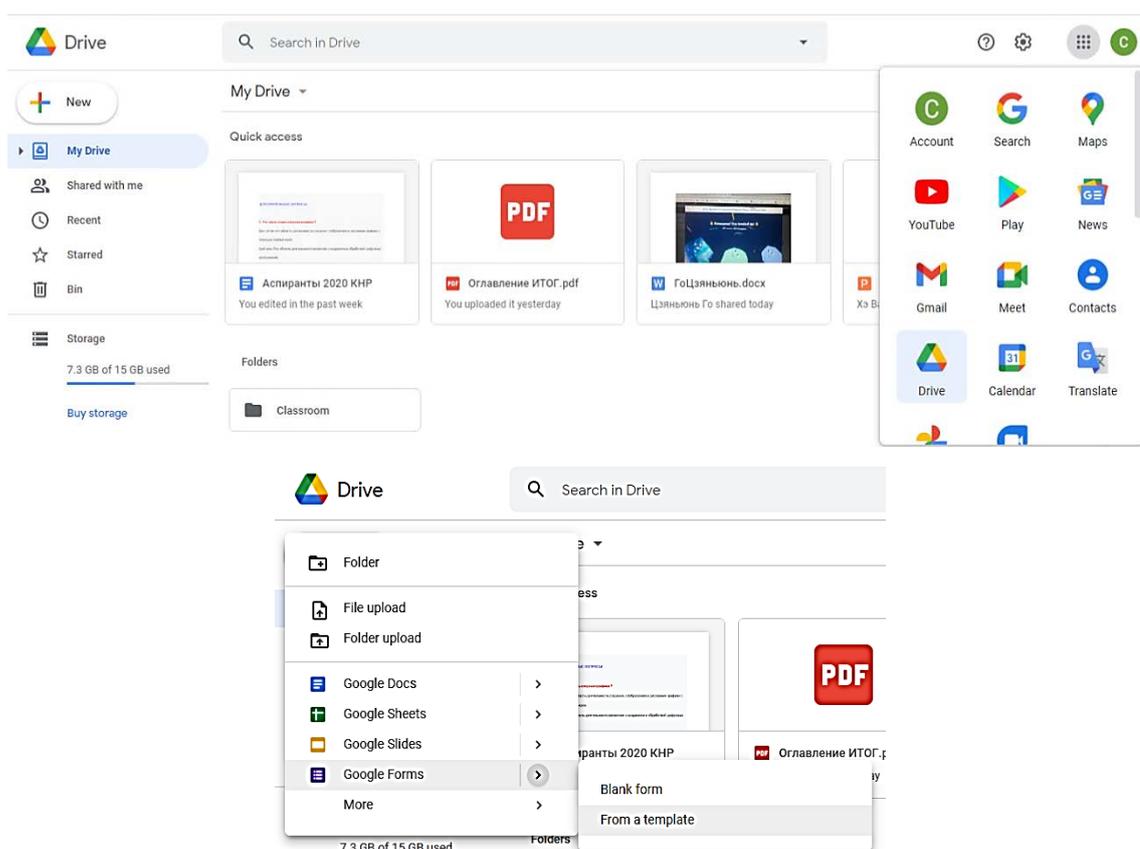
1. *architect*

2. *muralist*
3. *painter*
4. *sculptor*

### 7.3 Making quiz in google forms

#### *Methodical recommendations for implementation*

1. Sign in to your Google account on Google and choose Google Drive, click Plus. At the top under Start a new form, click Blank Quiz. If you don't see this option, click the arrows next to Template gallery, scroll down to Education, and click Blank Quiz.



2. Give your quiz a name on the top left, title at the top of the quiz, and optionally a description.

3. On the top right of the quiz form page, click the Settings button (gear icon). Select the Quizzes.

## Settings

General

Presentation

Quizzes



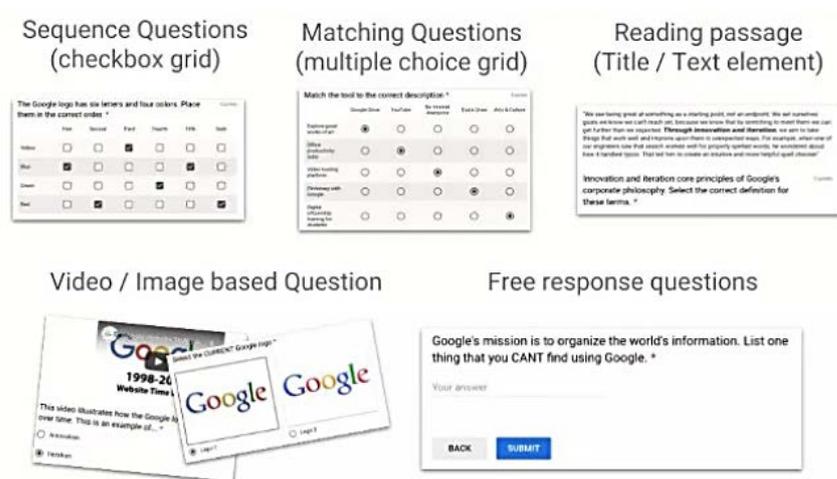
Make this a quiz

Assign point values to questions and allow auto-grading.

### 4. Build your quiz:

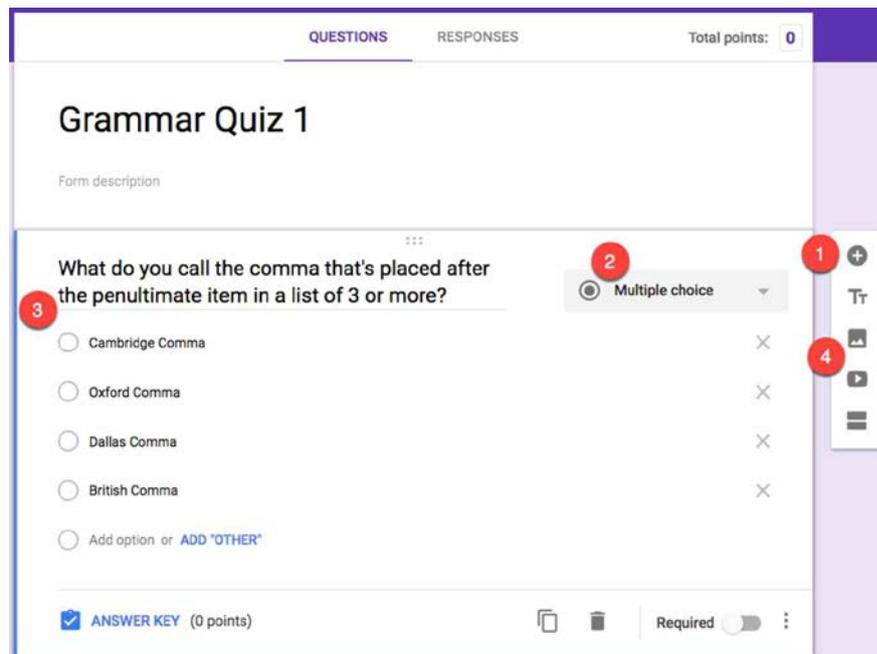
4.1 Click the plus symbol to add a question to the quiz.

4.2 Use the dropdown menu to choose the type of question you're asking (short answer, multiple-choice, checkbox, dropdown, etc.).

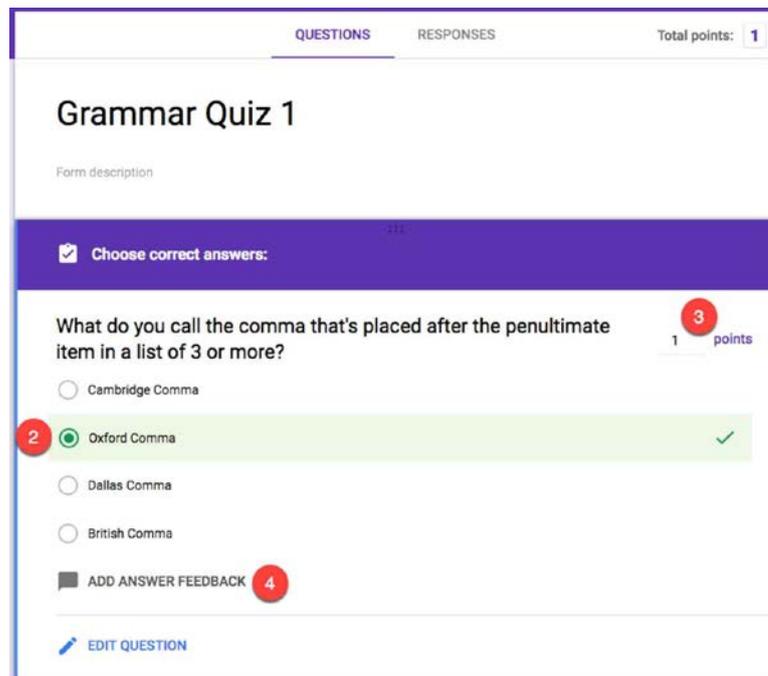


4.3 Type in your question and, if applicable, any answer options.

4.4 Add images or videos to the question if needed for explanations or examples.



5. Add an answer key to your Google Forms quiz
  - 5.1 Click the Answer Key link below the question.
  - 5.2 Choose the correct answer to the question.
  - 5.3 Assign a point value for the question.
  - 5.4 Click the Add Answer Feedback link if you want to provide students with feedback after answering a question. Enter the feedback you want to provide for correct and/or incorrect answers, and click Save



## 6. Adjust quiz settings

Repeat all of the steps above for each question you want to add to your quiz.

When you're finished, click the Send button, and adjust your quiz's settings:

### General Settings:

6.1 Check the boxes next to Collect email addresses and Response receipts if you want your friends to turn in a printed confirmation that they completed the quiz.

6.2 Check the box next to Limit to 1 response if you don't want friends to be able to take the quiz more than once.

### Presentation Settings:

6.3 Check the box next to Show progress bar if you want friends to see a visual indicator that shows how many more questions they have to answer.

6.4 Check the box next to Shuffle question order if you want all of your friends to receive the questions in random order.

Customize the text in the Confirmation message box. This is the text that displays when friends complete the quiz and is a good place for reminders like "Make sure to print this page and turn it in tomorrow morning."

### Quizzes Settings:

6.5 Choose when friends should receive their grade by selecting the radio button next to either Immediately after each submission or Later, after manual review.

6.6 Check the box next to Missed questions if you want friends to be able to see which questions they answered incorrectly.

6.7 Check the box next to Correct answer if you want friends to be able to see the answer key after their quiz has been graded.

6.8 Check the box next to Point values if you want friends to be able to see how many points each question is worth.

**Settings**

GENERAL PRESENTATION **QUIZZES**

**Make this a quiz**  
Assign point values to questions and allow auto-grading.

---

**Quiz options**

**Release grade:**

Immediately after each submission

Later, after manual review  
Turns on email collection

**Respondent can see:**

Missed questions ?

Correct answers ?

Point values ?

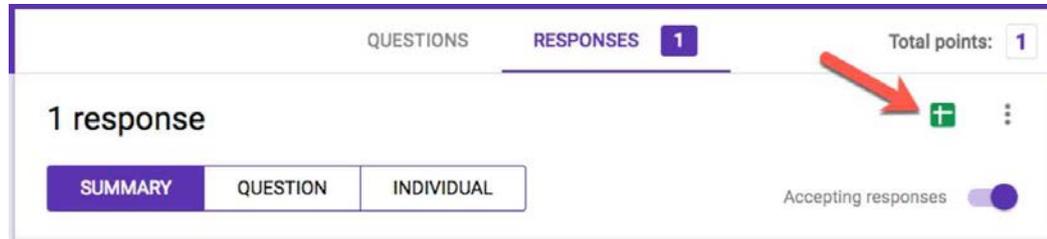
---

CANCEL SAVE

## 7. Send your quiz and collecting results

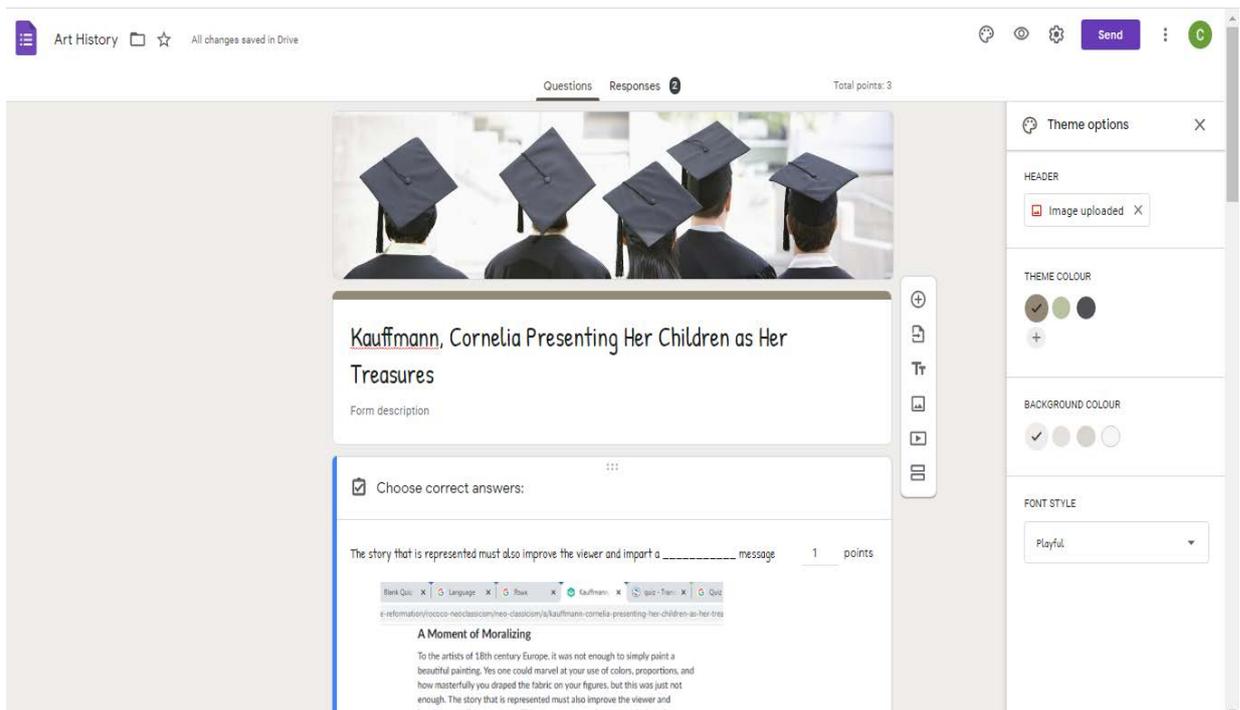
After saving your settings, click Send again. Choose how you want to send the quiz to students: You can send it by email, create a custom URL for the quiz, or embed the entire quiz on your class website. If you're sending the quiz via email, enter your students' email addresses, and click Send.

After your students have completed the test, return to the quiz to see the grades for each of your students. Click the spreadsheet icon to send your quiz grades to a new or existing Google Sheets grade book.



8. Create a Google Sheets grade book

9 Review the quiz and make screenshot 4 MY QUIZ



## **UNIT 8. PLANNING, CONDUCTING AND PROCESSING THE RESULTS OF SCIENTIFIC RESEARCH IN THE FIELD OF THEORETICAL AND PRACTICAL ART**

### **Main issues**

1. Methods of art research and heuristic function of digital research methods.
2. Application of statistical analysis software.
3. The use of cloud technologies as a planning tool for scientific research.

**Aim:** Provide an insight into the main methods of the art research, define the heuristic function of digital research methods, evaluate statistical analysis software and the use of cloud technologies as research planning software.

A way of research, theory or teaching) is a way to achieve a goal, to solve a specific problem; a set of techniques and operations for the practical or theoretical understanding of reality. The method is a way of cognizing science (S. L. Rubinshtein). Scientific research methods are the methods and means by which scientists obtain reliable information, which is then used to build scientific theories and develop practical recommendations. The choice of a scientific method or system of methods is based on methodology.

Let us consider the methods of the history of contemporary art, which arose as a result of studying 1) works of art and architecture, 2) communities of artists, exhibits, historical processes, 3) manifestations of the artist's creative personality, the intentions of clients and viewers. Natural methods – historical and iconographic studies of art, formal and stylistic analysis. The methods that emerged as a result of contact with the methodological concepts of neighbouring humanitarian disciplines are sociological and semiotic methods of art research [14].

The semiotic research method of art history is a result of the transfer of the semiotics approach from another discipline (semiology). The method's particularity is that it treats the visual arts and architecture as a sphere of

communication, which is carried out using special means, but at the same time it can be studied on the basis of verbal communication [24].

The heuristic function of digital research methods in the humanities is mainly focused on finding patterns, dynamics and relationships in data analysis. Culturology “should not try to discover rigid cultural laws, but study cultural patterns and build mathematical models that predict these patterns” [20]. Thus, informational methods in art history include:

- large data analysis;
- digital modeling and visualization of processes and phenomena;
- statistical forecasting of cultural processes;
- systematization and classification of data using information database systems.

Now, when we have identified new informational methods that are used in the analysis of culture and art, it is worth noting their shortcomings. One of the significant problems is the need to formalize content and applications in data structures, algorithms and ways of presenting the obtained results. The universalism and objectivity of mathematical theory lead to the mechanization of the process of knowledge and its reduction to a set of rules. However, in the analysis of cultural objects, objectivity and universalism can only lead to distortions of the obtained data. For example, quantitative analysis is more easily perceived as “evidence”, while rhetoric and cultural differences remain at the “argumentation” level.

The comparative method is used when objects (at least two) are studied simultaneously and the comparison with the aim of detecting similarities and differences becomes the main method of analysis. The number of objects studied is small (two or three), and each of them is studied comprehensively.

It is necessary to find the most convenient form of presentation data for analysis. The main technique to do this is schematization. A scheme always simplifies real relationships, coarsens the true picture. Therefore, schematization of relations is the compression of information. But it also presupposes the search of a

visual and easily visible form of presenting the information. For this purpose, the data can be summarized in tables or charts.

A table's convenience is in the inclusion of both quantitative and qualitative data. The purpose of a table is a quick data evaluation. Usually, a row corresponds to a case, and columns represent its various aspects (features) [11].

A diagram is another technique for concise visual presentation of information. There are different types of diagrams. In structural diagrams, elements are depicted with conventional shapes (rectangles or ovals), and the links between them are represented by lines or arrow, that identify the logical structure of events or text. In this case, a semantic analysis is first carried out and nodal events or components are outlined, and then they are presented in a graphical form so that the connection between them becomes as clear as possible.

Methods of quantitative analysis are usually divided into two groups. First, statistical description methods are used to quantify the data obtained in a specific study. Second, statistical inference methods are used to extend the results obtained in a particular study to the entire phenomenon as such, to draw general conclusions. Statistical methods in general are used to identify stable patterns and design theories to explain them [11].

Statistical inference is the process of hypothesis testing. Initially, it is always assumed that the observed differences are random, that is, the sample belongs to the same general population. In statistics, this assumption is called the null hypothesis.

Statistical analysis software: Microsoft Excel is a program designed to work with spreadsheets.

SPSS Statistics (Statistical Package for the Social Sciences) is a computer program for statistical data processing, one of the market leaders in the field of commercial statistical applications intended for applied research in the social sciences. Its capabilities include:

- Data entry and storage.
- Use of different variable types.

- Frequency distribution of features, tables, graphs, contingency tables, diagrams.

- Primary descriptive statistics.

- Marketing research.

- Analysis of marketing research data.

STATISTICA is a comprehensive statistical analysis package developed by StatSoft. The STATISTICA package implements procedures for data analysis, data management, data mining and data visualization. It includes many statistical analysis methods (more than 250 built-in functions) that are combined in specialized statistical modules [20].

STATA – professional statistical software package. It is the most popular among the US educational and scientific institutions along with SPSS.

STATGRAPHICS PLUS is a powerful statistics program. Contains over 250 statistical functions, generates clear and customizable report functions.

The use of cloud technologies for planning scientific research makes it possible to expand the possibilities of preparing the schedule, communications, cooperation, by considering the individual characteristics of the researcher. Ability to cooperate also improving the planning and management of the research as a whole [20].

Google and Microsoft provide the ability to use standard office suite features in the cloud to collaborate while working with electronic documents, spreadsheets, and presentations. Google Apps for Education and Microsoft Office 365 for Education cloud services enable built-in instant messaging, collaborative scheduling calendars, and shared address books. Each user of cloud systems has access to a cloud disk space to store any information, including the results of cloud work. You can also use programming services, storage services, database services, graphics services, virtual desktop services, and cloud-based antivirus programs that are available from Google or Microsoft account.

*Conclusion:* Methods of contemporary art history are used to study works of art, architecture, artistic education, exhibiting art, historical processes, artist's

personality, the intentions of clients and viewers of art. Natural methods of art history are historical and iconographic research of art, formal stylistic analysis. Methods that appeared as a result of contact with methodological concepts of neighbouring humanitarian disciplines are sociological and semiotic methods of the art research.

Statistical analysis software: Microsoft Excel – a program for working with spreadsheets. SPSS is a statistical data processing software, one of the market leaders in commercial statistical products for applied research in social sciences.

The use of cloud technologies for planing scientific research makes it possible to expand the possibilities of preparing the schedule, communications, cooperation, by considering the individual characteristics of the researcher. Ability to cooperate also improving the planning and management of the research as a whole.

*Key concepts:* methods of art history research, methods of presenting research results in a concise visual form, graphical tools of research, statistical data processing program, cloud technologies as software for planing scientific research.

## **KNOWLEDGE CONTROL SECTION**

### **List of credit requirements**

The discipline is studied for one semester and provides for independent work of students. To be admitted to credit, a student must fulfil the following requirements:

1. attending lectures;
2. performing laboratory work;
3. performing tasks for controlled independent work.

The form of the test is an oral survey.

### **Criteria for assessing student learning outcomes**

To prepare for the current/intermediate certification, the student should review all available and recommended materials presented in print or electronic form. Intermediate certification is carried out to assess the quality of students' assimilation of the entire volume of the discipline content and to determine the actually achieved knowledge, skills and abilities, as well as competencies formed during classroom studies and student independent work.

#### ***Criteria for evaluating student responses***

Score 10-8 points: The answers to the student's questions are presented logically, consistently and do not require additional explanations. Draws reasoned conclusions, demonstrates deep knowledge in the studied area, knowledge of the conceptual apparatus and scientific language in the subject; the ability to use it in setting and solving scientific and professional problems; the ability to independently solve complex problems within the framework of the curriculum; assimilation of basic and additional literature recommended by the curriculum; active independent work in laboratory (practical) classes, a high level of culture of performing tasks, competent design of educational documentation.

Score 7-5 points: The answers to the questions posed are given by the student systematically and consistently. He/she responds confidently and demonstrates an ability to analyze the material, but not all conclusions are reasoned and based on evidence. The student demonstrates active independent work in practical, laboratory classes, a high level of culture for completing tasks and preparing educational documentation periodically participates in group discussions.

Score 4 points: The student demonstrates a superficial knowledge of the subject. It is difficult for a student to solve specific problems. The student finds it difficult to conclude. The student demonstrates a sufficient amount of knowledge in the subject within the framework of the educational standard.

Score 3-1 points: The student does not have a system of knowledge in the discipline. He/she does not analyze, does not draw conclusions, does not answer additional questions and is passive, has demonstrated a low level of culture of performing tasks and their execution in laboratory (practical) classes, does not know the subject within the framework of the educational standard or refuses to answer.

### **Tasks for supervised independent work of students**

Independent work of students is aimed at in-depth knowledge of the educational material by systematization, planning and control of their own activities.

#### *Questions and creative assignments*

##### **Exercises**

1. Prepare a presentation on one of the questions «Unit 2. Multimedia in organization and presentation of research in the field of theoretical and practical art criticism».

Report form - the electronic version of the presentation (file).

2. Develop a poster to advertise the defence of your own master's thesis.  
«Unit 3. Technologies and means of processing graphic information».

Report form - the electronic version of the presentation (file).

3. Develop a video sequence to advertise the defence of your master's work.  
«Topic 5. Technologies of dynamic graphics: video processing»

Report form - the electronic version of the presentation (file).

4. Solve the crossword puzzle «CULTURAL CROSSWORDS» on the service Google Arts & Culture «Unit 6. Methods and means of finding information on the global Internet»

Report form - the electronic version of the presentation (file).

5. Develop an information resource based on network services to interact with the audience to popularize and attract the audience to art « Unit 7. Network (online) services in the organization of innovative activities in the field of culture»

Report form - the electronic resource (link to resource).

### **Test questions by topic**

#### *Methodical recommendations for implementation*

Use a computer program PowerPoint to prepare answers to the seminars.

PowerPoint is a computer program that allows you to create and show slides to support a presentation. You can combine text, graphics and multi-media content to create professional presentations. PowerPoint can improve the clarity of your presentations and help you to illustrate your message and engage your audience. Your presentation will need to be carefully planned and structured in order to achieve your objectives.

As a **presentation tool** PowerPoint can be used to:

- organise and structure your presentation;
- create a professional and consistent format;
- provide an illustrative backdrop for the content of your presentation;

- animate your slides to give them greater visual impact.

### **1. Designing PowerPoint slides using colour**

- Ensure that all of your slides have the same or similar background images and colour schemes. PowerPoint's design templates can be used for this.
- Prepare slides that use a bold colour contrast, e.g. black or deep blue text on a cream background (black and white can be too glaring for the audience).
- Avoid using red or green for text or highlighting as it can be difficult to read.

### **2. Designing PowerPoint slides Using text**

- Avoid using too much text (slides should have no more than six bullet points and each bullet point should be no more than six words long).
- Create bullet points which are clear summaries of key points. It is not necessary for bullet points to be complete sentences.
- Too many variations in font size and type can be visually confusing.
- Ensure that your text is at least **24pt otherwise** it may be difficult to read on screen.
- Choose left align for all text to make it easier to read.
- Avoid multiple columns of text on a single slide as they can be difficult to follow on screen.
- Use bold for a clear and simple form of emphasis and headings rather than UPPER CASE, italics or underlining.
- Set clear hierarchies for type size to help your audience distinguish between headings, main text and other types of text.

### **3. Making the most of graphics**

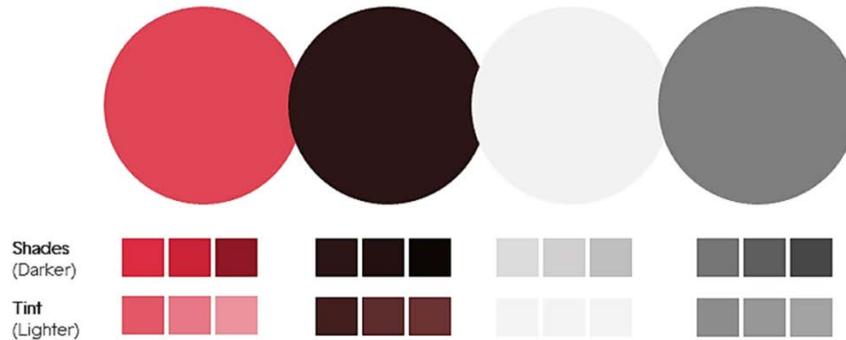
- Make sure graphics are relevant to your text and not just decorative.
- Consider using graphics to replace text where you think an image would be easier to understand.

### **4. Use harmonious colour palettes for your slide designs**

## Color Palette #1- Powerfully Memorable (Red and Grey)

This color palette comprises basically 2 colors: red and grey and shades of them. This high contrast color scheme is applicable to all types of presentations, especially where you need to pitch your products or services.

Red adds energy to the content and the slide, while grey grounds the slide, makes it look professional and lets red be the centre of attraction.



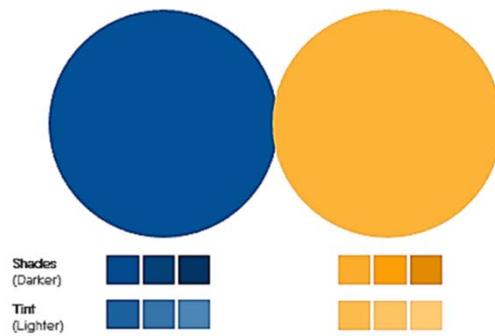
## Color Palette #2- Vibrant and Young (Plum, Orange, Teal & Grey)

If you feel combining these colors is creating a color riot, just choose any 2 contrasting colors from this palette and make your slides.



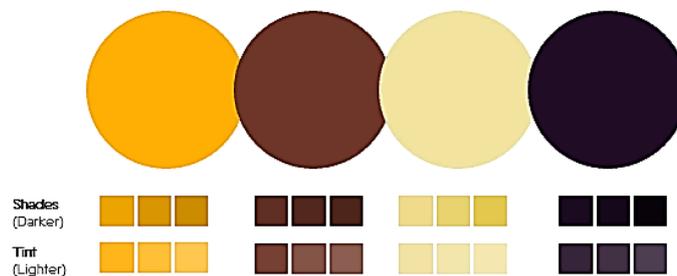
## Color Palette #3- Opposite Attraction (Blue & Yellow)

One that represents summer and the other winter. Yellow and blue. A warm and cool color in one single slide gives you the perfect balance- the youthful energy and the professional touch.



### **Color Palette 4- Down to Earth vs. Royal (Brown & Gold vs. Dark Purple)**

Earth tone color schemes include combination of browns and tans. The soil, clay, dirt and rocks give us neutral colors that can be used to give a down-to-earth look to our presentation. Here's such a scheme that contains all the neutral colors except one- dark purple that is a color of royalty.



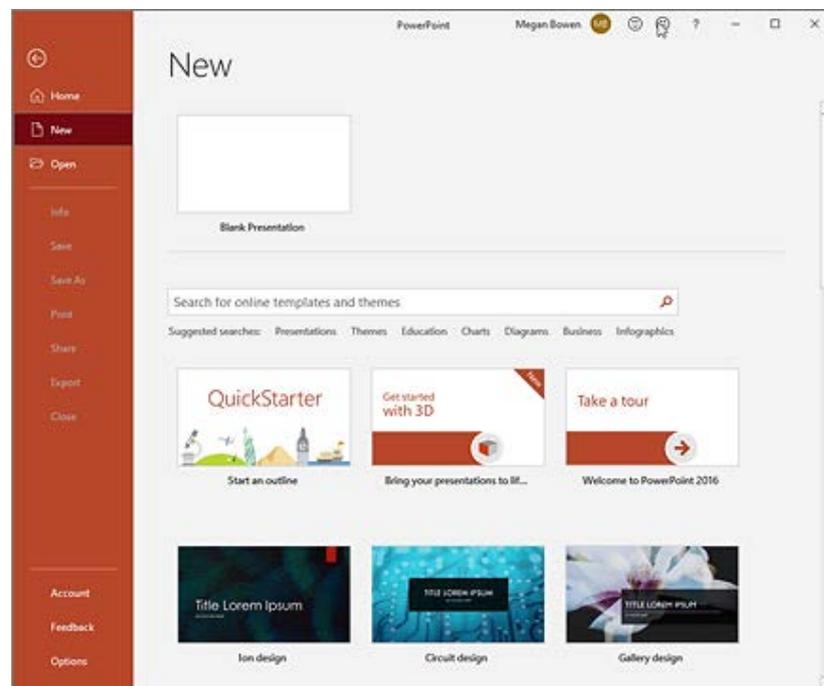
### **5. Making the most of animations**

- Animating elements of slides and using Slide Transition are two of the most powerful features that PowerPoint offers.
- It is very easy to overdo your use of these features and create a presentation where the animation distracts your audience from the content of your presentation.
- Use animations to show progression. Animation is very effective at revealing a process one stage at a time.

- Be conservative. Make sure that any animation you use serves a clear purpose (e.g. to introduce a new piece of information at an appropriate point). If you cannot think of a reason to animate your slide - don't do it!
- Be consistent. Try to ensure that you use similar types of animation for similar functions. For example, if your text always drives in from the left it will be distracting if it suddenly appears from another direction or uses another animation technique.

## 6. Create a presentation

- 1. Open PowerPoint.
- 2. Select an option:
  - Select Blank Presentation to create a presentation from scratch.
  - Select one of the templates.
  - Select Take a Tour, and then select Create, to see tips for using PowerPoint

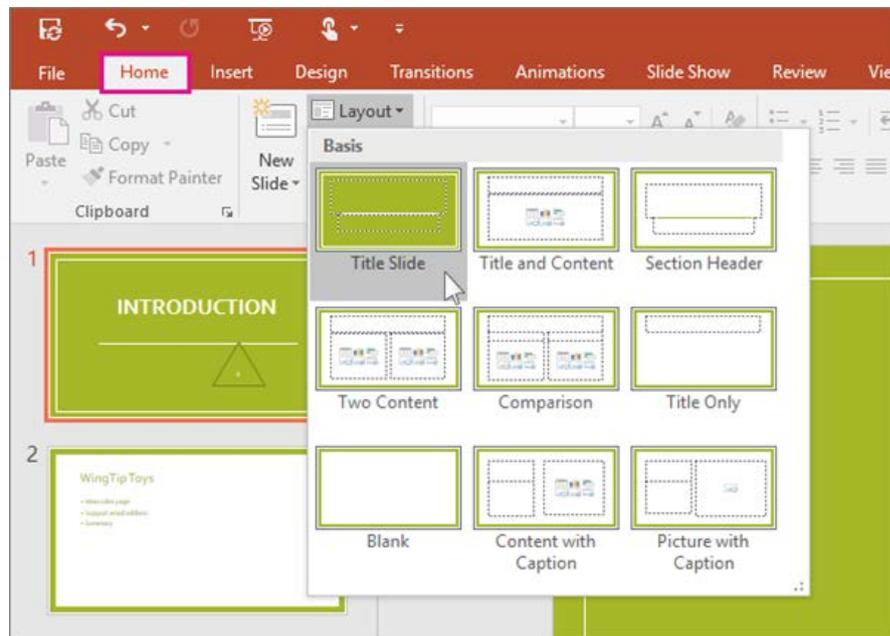


## Add a slide

1. Select the slide you want your new slide to follow.

2. Select **Home**> **New Slide**.

3. Select Layout and the you type want from the drop-down

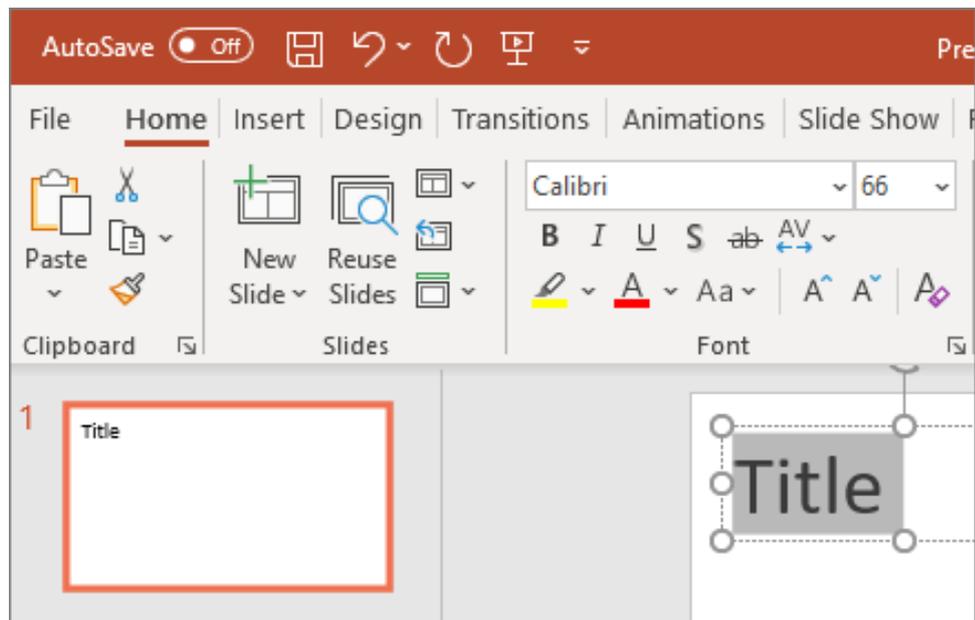


### **Add and format text**

1. Place the cursor where you want, and type.

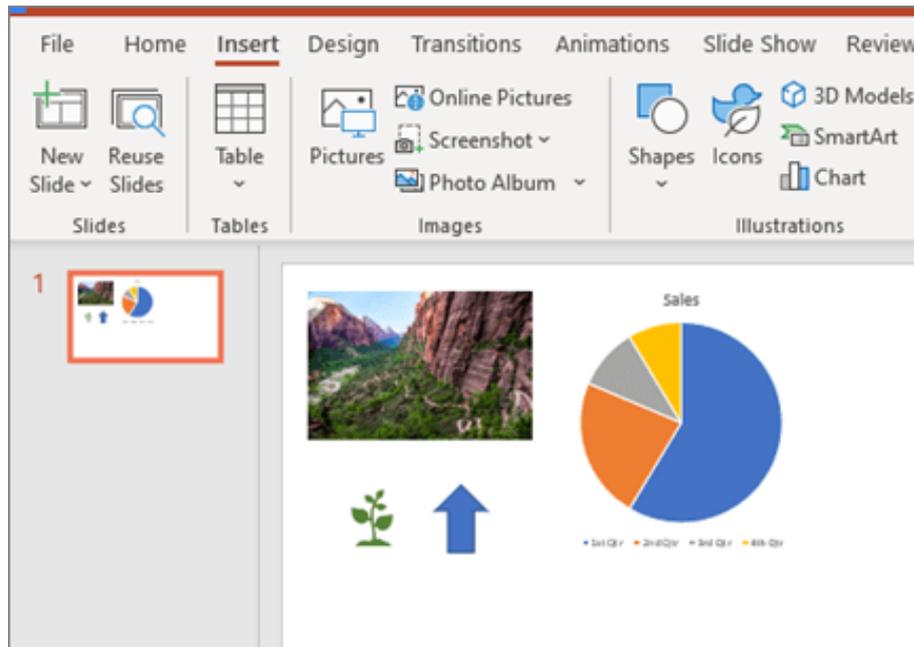
2. Select the text, and then select an option on the Home tab: Font, Font size, Bold, Italic, Underline, ...

3. To create bulleted or numbered lists, select the text, and then select Bullets or Numbering.



### **Add a picture, shape, or chart**

1. Select **Insert**.
2. To add a picture:
  - Select **Picture**.
  - Browse for the picture you want and select **Insert**.
3. To add a shape, art, or chart:
  - Select **Shapes**, **Icons**, **SmartArt**, or **Chart**.
  - Select the one you want



### Requirements for the design of slides

Style	Unified slide design style. Avoid styles that distract from the presentation itself. Auxiliary information (control buttons) should not prevail over the main information (text, Figures).
Background	The background should not be too bright or colorful.
Use of color	Contrasting colors are used for the background and text.
Animation effect	You can't overload slides with animation effects. To change slides, you must use the same animation effect.

### Requirements for submitting information

Information content	The text on the slides should be readable. Each slide must contain a title. Don't put a dot at the end of titles. Headlines should attract the audience's attention.
Location of information on the page	Preferably, the information should be placed horizontally. The most important information should be located in the center of the screen. If the slide contains an image, the label must be located below it. The space of the slide (screen) should be used as much as possible.

Fonts	For titles – at least 24. for information-at least 18. for text, it is best to use the following fonts: Arial, Tahoma, Verdana, Times New Roman, Courier New. You can't mix different font types in the same presentation. Use bold, italics, or underscores to highlight information. Capital letters should not be used too often.
Ways to highlight information	You should use: borders, borders, fill, hatching, arrows, drawings, diagrams, diagrams to illustrate the most important facts.
Quantity of information	Do not fill one slide with too much information: no more than three facts, conclusions, and definitions; no more than 7 elements per slide.
Types of slides	To ensure diversity, you should use different types of slides: with text, with tables, and with diagrams.

### **Recommended Assessment Means**

It is recommended to use the project work, scientific report and presentation of research results to assess the students' academic achievements level and to identify its compliance with the requirements of the educational standard. All activities should include the development, planning and implementation of cultural research as well as creative and heuristic issues and prognostic conclusions.

### **Guidelines for Organizing and Carrying out Individual Work on Discipline**

Students' individual work is aimed at enriching their skills in the discipline «Information Technologies in Art Criticism» beyond the in-class activity. The purpose of students' individual work is to facilitate the full assimilation of the discipline content through the systematization, planning and control of their individual activities. The teacher gives assignments for individual work and regularly checks them.

According to the content, Aims and objectives of the discipline «Information

Technologies in Art Criticism», students are expected to carry out the following types of individual work: collection and analysis of cultural data, formulation of conclusions and forecasts, development of the research report, development and presentation of research results.

### **Criteria for Evaluating Students' Knowledge and Skills Level**

To assess students' achievements it is recommended to use the following diagnostic tools:

- questioning students during classroom discussions;
- testing selected topics of discipline;
- defence of individual tasks performed during classes;
- presentation of the individual work and discussion on the obtained research results;
- defence of individual project;
- student's participation at the conference with research results presentation;
- passing the final test in disc

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