KONSTANTIN PRESLAVSKY UNIVERSITY SHUMEN

KONSTANTIN PRESLAVSKY UNIVERSITY OF SHUMEN

FACULTY OF EDUCATION
DEPARTMENT OF ART EDUCATION AND TECHNOLOGICAL EDUCATION

PETYO DAMYANOV STEFANOV

THEME "THE ROLE OF DIGITAL TECHNOLOGIES IN THE DEVELOPMENT OF STUDENTS' ARTISTIC AND CREATIVE ABILITIES (GRADES 5–6)"

A B S T R A C T

of a dissertation thesis for the acquisition of the educational and scientific degree "doctor"
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The dissertation was discussed at a meeting of the Department of "Art Education and Technological Education" at the Faculty of Education of "Konstantin Preslavsky" University of Shumen, held on 4.12.2025, and was submitted for public defence.

The dissertation comprises a total of 291 pages, of which 224 are text, 6 pages – bibliography, and 61 pages – appendices. The exposition includes 23 figures, 46 tables, and 20 diagrams. The bibliography contains 103 sources: 77 in Cyrillic and 14 in Latin. Twelve of the sources are web-based.

The public defence of the dissertation will take place on 27.02.2026 at 11:00, in Room 211, Building 2 of "Konstantin Preslavsky" University of Shumen.

The materials for the defence are available in Room 107, Building 1 of Shumen University.

I. General Characteristics of the Dissertation

Relevance of the Study

The rapid integration of **digital technologies** into all spheres of social life, including education, sets new requirements for the development of **digital competencies** in students and teachers. In the contemporary context, **digital literacy** is defined not only as the ability to operate technological tools but also as the capacity to solve problems, create products, and stimulate **creative thinking** through their use. Digital instruments are becoming an integral part of the cultural and communication environment of adolescents, making their application in the educational process **inevitable and necessary**.

The integration of digital technologies in **Fine Arts** education opens new possibilities for developing **visual thinking**, activating cognitive activity, and enriching artistic forms of expression. The results of surveys conducted with teachers and students in the lower secondary school stage (grades V-VII) indicate that, despite the awareness of the benefits of digital technologies, a large proportion of educators lack sufficient training, and the school environment does not always provide the necessary resources. Concurrently, students show a sustained interest in using computer programs and applications to create artwork, combining digital and traditional means of expression. This confirms the potential of technologies to be integrated into education as a natural continuation of contemporary visual expression.

The results reveal a need for an in-depth study of the influence of digital technologies on students' creative thinking, imagination, and artistic skills, as well as for the improvement of teachers' professional and methodological training. The dynamic changes in the student–teacher–school system, driven by technological progress, require **pedagogical adaptability** and the application of **innovative approaches** in education.

The relevance of the present study is determined by two factors.

The first factor is related to the fact that digital technologies are a natural part of students' communication and everyday experience. Integrating them into art education corresponds to the need to develop visual culture, creative thinking, and artistic self-expression. It is precisely in 5th–6th grade that key artistic skills are formed, which

makes the role of digital tools in stimulating artistic and creative abilities particularly significant and relevant.

The second factor concerns the necessity for art education to be modernized in accordance with the new curricula of the Ministry of Education and Science (2018) and the development of the digital educational environment. This requires the development and piloting of a system-model of lessons with integrated digital technologies, which should ensure more effective teaching and increase students' interest and engagement in the artistic-creative process.

In conclusion, the relevance of the study arises from the need for art education to respond to the challenges of the digital era by combining traditional artistic practices with the innovations of contemporary technologies, which will contribute to the formation of competent, adaptive, and creative individuals.

II. Structure and Content of the Dissertation

Structurally, the research paper comprises an introduction, three chapters, conclusions and recommendations, a bibliography (or references), and appendices. The appendices contain illustrative material for the educational process and the individual stages of the research.

The introduction substantiates the relevance of the topic concerning the application of digital technologies in art education. It emphasizes the need to develop the digital competencies of teachers and students as a means of stimulating creative activity and increasing the effectiveness of the learning process.

The motives for choosing the topic are supported by the results of surveys conducted among teachers and students in lower secondary education, which reveal an interest in digital technologies, but also show that limited resources and insufficient preparation hinder their systematic use.

The need to examine the impact of digital technologies on students' creative thinking and artistic skills, as well as on teachers' professional preparation, is emphasized. The development of a methodology for the effective integration of digital technologies is presented as an essential part of the study.

In conclusion, it is noted that digital technologies can stimulate students' active creative expression and can become a natural continuation of contemporary visual expression.

Chapter One
THEORETICAL FRAMEWORK AND JUSTIFICATION OF THE PROBLEM

In the first paragraph, **"The Emergence and Development of Digital Arts,"** the formation and evolution of digital art are examined, tracing its history from the experiments of pioneers such as Ben Laposky, Frieder Nake, and Herbert Franke in the 1950s–60s, through the development of computer graphics, animation, and interactive media during the 1980s–90s. Special attention is given to the transition from 2D to 3D graphics, virtual and augmented reality, artificial intelligence, and blockchain technologies, as well as to the role of the internet, social media, and post-digital art in facilitating global exchange of ideas.

The types of digital arts include generative and algorithmic art, ASCII art, internet art, digital painting, computer illustration, game art, virtual reality, interactive and multimedia art, and video art. Artists such as Georg Nees, Vera Molnar, Vuk Ćosić, Nam June Paik, and Bill Viola demonstrate experimental approaches and the blending of different media.

Digital technologies play an important role in education by supporting the development of creative, technical, and cognitive skills. Graphic tablets, styluses, computers, interactive whiteboards, cameras, scanners, smartphones, multimedia projectors, and AR/VR devices are used. The software includes programs for raster and vector graphics, 3D modeling, video editing, AI generative tools, VR/AR platforms, and presentation software. Hardware and software combine in various forms of digital art—digital painting, 3D imagery, video and multimedia projects, VR/AR applications, digital photography, animations, and web installations.

These technologies develop students' digital literacy, visual culture, creativity, and critical thinking, modernize teaching, and prepare young people for professional and social realization.

In the next paragraph, **"Psychological and Pedagogical Characteristics of the 'Digital Generation' (Grades 5–6),"** the influence of digital technologies on contemporary students is examined by tracing their cognitive, psychological, and social characteristics, their learning habits, modes of communication and information processing, as well as the specific skills and preferences of Generation Z and Alpha—such as multitasking, visual communication, autonomous and group learning. The impact of electronic media on attention and social development is also discussed, with emphasis placed on the need for innovative pedagogical methods that integrate digital technologies into art education in order to stimulate creative activity, engagement, and the effectiveness of the learning process.

The paragraph **"Application of Digital Technologies in Art Education in Grades 5–6"** explores the possibilities for integrating digital technologies into lower secondary education and their influence on students' creative thinking, visual culture, and digital literacy. The curricula for 5th and 6th grade emphasize the gradual acquisition and enhancement of digital skills—from working with graphic editors and creating images to developing more complex visual projects that include photography, posters, and combinations of text and image. Digital technologies are viewed as a means of developing creativity, critical thinking, and visual communication, while simultaneously supporting both individual and collaborative work.

The connections between the subjects *Art* and *Information Technology* are highlighted, as they contribute to the development of key competencies and prepare students for the digital age. Despite challenges related to technical resources and teacher qualifications, the integration of digital tools in art education transforms the learning process into a dynamic, modern, and motivating environment that combines tradition and innovation.

In the paragraph **"Opportunities for Integrating Digital Technologies in the Implementation of the Art Curriculum (Grades 5–6),"** the ways in which digital technologies can be incorporated into the art education process are clarified. Methods and approaches for developing children's imagination, creative abilities, and visual thinking are presented. It is shown how traditional techniques can be combined with digital means of expression through methods such as

deformation, stylization, restructuring, associations, animating objects, and metamorphosis. The importance of graphic editors, 3D programs, and digital photography for creating and transforming images is emphasized, highlighting their speed, variability, and opportunities for experimentation. It is clarified that the educational process aims at developing students' independent expression, creativity, and visual literacy. This leads to turning them into active creators of images and compositions that they can edit and interpret according to their own intent. The interdisciplinary connections between Art and Information Technology are highlighted, as they strengthen students' digital and artistic competencies.

In the paragraph **"The Nature and Manifestation of Students' Artistic and Creative Abilities,"** the essence and significance of artistic–creative abilities and creativity among students are explained. Theoretical approaches are offered for developing personal qualities, independent and critical thinking through art education. It is stated that abilities are formed through active artistic activity, which develops imagination, emotional sensitivity, observation skills, and an individual artistic style. It is emphasized that these abilities are not innate but are refined through purposeful learning. The four-stage model of the creative process according to G. Wallas—preparation, incubation, illumination, and verification—is explained, and its use is proposed for stimulating creativity and implementing ideas in practice. An understanding is achieved of the role of creativity in social progress, personal self-expression, and adaptability to changing conditions.

It is noted that the activity of the teacher and the student is mutually dependent and necessary for effective instruction, and alternative methods that stimulate thinking, independence, and creative skills are recommended. It is concluded that in the lower secondary stage, art education develops interest in artistic culture and employs digital technologies through competencies in the area of **"Visual Culture and Electronic Media"** for application in students' creative activities.

The paragraph **"Factors, Approaches, and Methods for Stimulating Students' Creativity in Art Education"** examines the influence of internal and external factors on the development of students' creative abilities through artistic activity. These include innate

predispositions, personal qualities such as curiosity, imagination, and persistence, as well as the social and family environment, the educational system, and access to materials and cultural resources. Artistic activity stimulates imagination, the senses, critical thinking, and emotional intelligence, while mastering techniques such as drawing, modeling, and collage provides the foundation for individual and original creative expression.

Various pedagogical approaches and methods are applied to develop creativity. The individual and differentiated approach allows adaptation to the student's personality and level; the problem-based approach stimulates thinking and imagination through creative tasks; and the integrative approach combines diverse forms of artistic activity inside and outside the school. Verbal methods such as discussion, visual methods such as demonstration and illustration, practical methods such as exercises and independent work, as well as dialogic and situational methods develop the ability to generate ideas, critical thinking, and independence. Diagnostics through observation, project assignments, and tests helps the teacher adapt the educational process and create a stimulating environment for the creative and personal development of students.

The paragraph **"Formation of Digital Competencies in the Educational Process in Art Education for the Development of Students' Artistic and Creative Abilities"** examines the importance of digital skills in contemporary education and their influence on students' creative development. Through the integration of modern technologies such as graphic software, digital platforms, 3D modeling, and animation, students not only acquire digital competencies but also enrich their creativity, visual culture, and technical skills. These abilities foster independent thinking, experimentation, and individual creative expression, preparing students to work with global resources and for future professional realization.

Digital competencies are formed through the integration of technologies into the curriculum, project-based learning, and the use of online platforms for sharing artworks. They stimulate creative thinking and artistic–creative abilities, which include observation, color perception, imagination, independence, and emotional expressiveness. By combining traditional artistic techniques with digital tools, students

develop an individual style, while the teacher plays a key role as a mentor who supports each student's creative and emotional expression. In this way, digital technologies become a tool for stimulating creativity, innovation, and the preparation of young artists for the modern digitalized world.

Chapter Two
METHODOLOGY OF THE EXPERIMENTAL RESEARCH

2.1. Aim, Tasks, Object, Subject, and Hypothesis of the Experimental Research

The aim of the experimental research is to determine the extent to which the use of digital technologies in art education in 5th and 6th grade contributes to the development of students' artistic and creative abilities.

Achieving this aim requires analyzing the problem from an empirical perspective. The aim, as formulated, motivates the following ***empirical research tasks***:

• **to determine the initial and final levels of students' artistic preparation**, the level of their artistic knowledge and their ability to perceive works of art, as well as the degree of development of their visual representations, associative and combinatory thinking, and imagination;

• **to develop and test a system-model of art lessons** in which the experimental methodological model, based on the integration of digital technologies in teaching, can be applied;

• **to develop diagnostic tools** for recording the results of the experimental research in accordance with the specifics of the dissertation topic;

• **to conduct a comparative analysis of the empirical data** from the experimental research to evaluate the effectiveness of the application of digital technologies in art education.

The object of the two-year study is the students from *Sava Dobroplodni Secondary School* and *Dr. Petar Beron Primary School* in the city of Shumen. To ensure the statistical reliability of the results, it was decided to work with four classes, including a total of 104 students. The control group (CG) consists of students from grades V–VI "b" (26

students) and V–VI "v" (28 students) from *Dr. Petar Beron Primary School*, while the experimental group (EG) consists of students from grades V–VI "a" (24 students) and V–VI "b" (26 students) from *Sava Dobroplodni Secondary School*.

The experiment is conducted with students selected without any special criteria and working with them under real and relatively equal conditions, taking into account their age and individual capabilities. To verify the qualitative equivalence of the groups, the following factors were considered:

• a review of the students' personal records was carried out to determine their biological characteristics regarding gender, health status, and physical development;

• the intellectual development and interests of the students were examined, as well as certain specific skills — through questionnaires and tests.

The data from the personal records show no significant differences in the sociometric indicators of the students. The experimental group includes 32 boys and 18 girls. The control group consists of 23 boys and 31 girls.

The social environment of the students in both groups is approximately the same. The results of the statistical analysis of the data determining the level of artistic knowledge and drawing skills of the examined students show close numerical values. This provides grounds to assume that both groups are equivalent and can successfully participate in the study.

The subject of the research in this dissertation includes the creative thinking and imagination, artistic knowledge and skills of students in grades V–VI, the level of their visual representations, associative and combinatory thinking, as well as the degree of development of their abilities in art education when digital technologies are applied.

Hypothesis: If digital technologies are included in the Fine Arts education of V and VI grade, students' creative thinking and imagination will be enhanced, and their visual-creative abilities will be developed.

2.2. Diagnostic Methodology

The second paragraph describes the diagnostic methodology, which is aligned with the nature of the research activity and a number of requirements, the most essential of which are objectivity, reliability, and validity. The methodology covers all empirical indicators of the phenomenon, and the methods used are clear, accessible for application at all stages of the study, and economical in terms of time, effort, and resources.

To accomplish the aim and tasks of the research, the following methods were applied in the dissertation:

- **Analysis and evaluation of the results of artistic activity;**
- **Empirical methods** – questionnaire, survey, test, diagnostic observation;
- **Mathematical–statistical methods** for analysis and synthesis of the obtained results.

2.2.1. Methods for Diagnosing the Level of Students' Artistic Preparation at the Beginning and End of the Empirical Study

- **Analysis and evaluation of the results of artistic activity**

The main method for diagnosing the level of artistic–visual development is the analysis of the artistic results. The examination of students' artistic abilities is carried out according to the indicators of two main criteria, using appropriate tools for differentiated assessment.

Artistic literacy is a criterion for the quantitative evaluation of the artistic results of students' creative activity. It is related to children's efforts to perceive and reflect the characteristic features of objects and phenomena from reality—their construction, shape, size, local color, spatial arrangement, and more. The main indicators for assessing children's artworks that form the degree of artistic literacy are: compositional solution, the method of color or graphic construction of the drawing, volumetric–plastic construction, construction of form, demonstrated artistic skills, and techniques of work.

Artistic expressiveness is a criterion for the qualitative evaluation of artistic results. This criterion is closely connected with the child's individual perception, impressions, and emotional experiences related to the depicted reality. In the context of applying digital technologies in the learning process, the indicators for evaluating artistic expressiveness are adapted to correspond to the specifics of digital visual artworks. They include: the content (concept) of the

student's work; demonstrated sense of balance (rhythm, pose, movement); and the use of color as a means of expression.

Diagnostic Observation

Diagnostic observation as a methodological approach in art education aims to provide an in-depth, systematic, and objective assessment of students' attitudes, skills, and behavior during their artistic and creative activity. Observation serves as a means of gaining insight into the logic of the student's creative process and identifying the development of their perceptions, abilities, and personal stance toward the artistic task.

The method is implemented over a series of at least three art lessons, with the requirement that the assigned creative tasks belong to different genres—figurative composition, landscape, still life—and that they be executed using a variety of techniques and materials. This sequence makes it possible to trace the student's adaptability, persistence, and creative flexibility when working in different visual–plastic contexts.

Evaluation focuses not only on the final result but also on the process of creation, which reveals cognitive, emotional, and behavioral aspects of learning, including independent planning, understanding of the task, and self-regulation.

2.2.2. Methods for diagnosing the level of artistic knowledge and students' ability to perceive works of visual art

- **Nonverbal multiple-choice questionnaire**

This method examines the level of artistic knowledge of the surveyed students regarding the main types of visual arts and their genre diversity during the initial (diagnostic) stage of the pedagogical experiment.

- **Final multiple-choice questionnaire**

The questionnaire is administered during the control stage of the experimental study to determine the level of artistic knowledge possessed by sixth-grade students in the field of visual art. It makes it possible to assess students' progress after the implementation of targeted pedagogical interventions and to compare the results between the experimental and control groups.

- **“Color Standards” method from the projective technique**

This method is used to study students’ emotional and evaluative attitudes toward the examined works of art. It helps trace how the viewer interprets the visual content and how they respond emotionally to the artwork. During both the diagnostic and control stages of the experimental study, this approach allows for the assessment of students’ emotional reactions and attitudes toward the visual arts.

2.2.3. Methods for diagnosing the degree of development of students’ artistic and creative abilities: visual imagery, associative and combinative thinking, imagination

- **Adapted H. Rorschach test**

This method is used to examine associative thinking, the richness of visual imagery, and reproductive imagination. It is applied at the beginning (diagnostic stage) and at the end (control stage) of the two-year experimental study. Assessment is carried out using a point system based on the formula K = A/B, where A is the number of points collected across all indicators, and B is the maximum possible number of points (40).

2.2.4. Mathematical-Statistical Methods

For the analysis, verification, and processing of the obtained **empirical data** from students' artistic results and knowledge, the following method is used: the **"Formula of the Polarity Method from the Projective Methodology."**

Based on the nature of the visual task, the forms of work used, and the possibilities of the visual material, each student's artwork is assessed according to the two main components—**Visual Literacy** and **Artistic Expressiveness**—using the formula:

$K=Na(+1)+b(+0.5)+c(-0.5)+d(-1)$

where:

- **a** denotes a high assessment (Excellent);
- **b** denotes a good assessment (Good);
- **c** denotes a satisfactory assessment (Satisfactory);
- **d** denotes an unsatisfactory assessment (Poor);
- **N** is the number of indicators or the number of students.

In the analysis of the empirical data, a **point system** is applied, determined by the formula K= A/B , where **A** denotes the sum of the

actually collected points for the given indicators, and **B** represents the maximum possible number of points, determined by the structure of the measuring instrument. The resulting coefficient **K** is a dimensionless quantity that varies in the interval **[0; 1]** and functions as a normalized relative indicator.

Chapter III
CONDUCTING THE EXPERIMENTAL RESEARCH AND COMPARATIVE ANALYSIS OF THE RESULTS

3.1. Program of the Experimental Research

The proposed methodological model is a system of lessons developed for the purpose of enhancing students' **visual-creative abilities** through the integration of digital technologies into the educational process. The model is based on the understanding that creativity and artistic skills can be purposefully stimulated through work with digital programs for creating and processing images.

For the purpose of the experimental research, two groups were formed: an **Experimental Group (EG)**, where the system-model lessons incorporating digital technologies are applied, and a **Control Group (CG)**, which is taught using the traditional methodology. The goal is to assess the extent to which the use of digital technologies activates **creative thinking**, develops **individual artistic style**, and elevates **visual-creative abilities**. The substantive aspect of the model includes themes and tasks related to graphic design, digital rug projects, image stylization, photo processing, and illustration, which are adapted to the age characteristics of V and VI grade students. These can be realized using specialized programs for digital image creation and processing, such as CorelDRAW, Adobe Illustrator, Photoshop, and Paint. Such a choice meets contemporary requirements for the formation of **digital competencies** while simultaneously maintaining the priority of artistic thinking.

The organizational aspect of the model is implemented in three stages: the **Ascertaining (Diagnostic) Stage**, the **Forming Stage**, and the **Control Stage**. The **Ascertaining Stage** determines the initial level of visual and digital preparedness. The **Forming Stage** is the actual core of the experiment, where, through lessons built upon the use of

digital technologies, the visual-creative abilities of the students in the Experimental Group are activated. The **Control Stage** allows for the comparison of the results between the Experimental and Control Groups through quantitative and qualitative analysis of achievements.

3.2. Ascertaining (Diagnostic) Stage

3.2.1. Theoretical Justification of the Experiment

The **Ascertaining Stage** within the framework of the experimental research holds fundamental significance, as it outlines the baseline level of students' artistic and educational preparedness and forms the foundation for subsequent pedagogical interventions. It is implemented at the beginning of the experiment and targets the fifth-grade students in both groups—the Control Group (CG) and the Experimental Group (EG). Its primary function is to provide reliable information regarding the level of students' artistic knowledge, skills, and creative manifestations, both in a traditional and a digital context.

Objectives of the Ascertaining Stage:

1. To diagnose the **entry level** of students' **visual-creative preparedness** according to pre-defined criteria and indicators, utilizing the appropriate toolkit.
2. To determine the entry level of students' **artistic knowledge** and their ability to perceive works of fine art, as well as the degree of mastered theoretical and artistic knowledge related to genres, types of fine arts, means of expression, materials, and techniques, including digital ones.
3. To determine the entry level of **visual-creative abilities**; the richness of visual representations; associative, combinatory, and variable thinking; and reproductive and productive imagination of the students in the CG and EG.
4. To conduct **diagnostic observation** to ascertain the current entry level of students' attitudes, skills, and behavior in artistic-creative activity, and to establish their independence, perception, and creative activity during the execution of different genre tasks.

Main Tasks:

For the purposes of the experimental research, the task is set to organize and conduct an entry diagnosis, demonstrating the level of

visual preparedness of the fifth-graders, taking into account the following requirements:

- To conduct 6 Fine Arts lessons, utilizing different forms of visual activity (by memory, by impression, by imagination), diverse visual materials (watercolor and tempera paints, ink, markers, pastels, and pencils, clay, modeling clay, and plasticine), various execution techniques, and different genres.
- Students must work independently, without being guided, assisted, or corrected, after being provided with the necessary instructions (requirements).
- Upon completion of the independent visual activity, all student artworks must be analyzed and evaluated differentially according to specified criteria and indicators and the corresponding measuring instrument.
- Using the **Formula of the Polarity Method from the Projective Methodology**, to calculate the comparatively objective coefficient of visual preparedness for each fifth-grader.
- The data obtained from the conducted lessons must be entered into a table containing the names of the 5th-grade students and interpreted according to the specific indicators for assessing their visual literacy and artistic expressiveness.
- Concurrently, **diagnostic observation** must be carried out during the visual activity in 3 of the planned lessons.

Verification of Students' Artistic Knowledge:

To accomplish this task, the diagnostic procedures involve a questionnaire—the **"Non-verbal Multiple-Choice Questionnaire"**, the **"Color Standards"** method from the projective methodology, and diagnostic observation (in 3 lessons) for the perception of works of fine art.

- **Test for Investigating Students' Cognitive Processes and Creativity**

The diagnostic task includes the application of an adapted **Rorschach Test**.

Expected Outcomes of the Ascertaining Stage:

- To determine the baseline level of students' artistic-cognitive and visual-creative preparedness.

- To outline the deficits and potentials in the development of creativity.
- To establish the degree of **digital competence** and the readiness for the integration of traditional and digital forms of artistic expression.
- To create a baseline for comparison, against which the effects of the subsequent forming stage of the experimental research can be accounted for.

The results of the ascertaining stage indicate a comparable level between the control and experimental groups, with no significant dominance of one over the other.

- **Diagnostic Observation:** In both groups, the average values of the coefficient **K** are "satisfactory," with approximately 1/4 of the students exhibiting skills for independent planning and control in visual activity.
- **Visual Activity (Artworks):** The arithmetic mean numerical coefficient for the indicators of **Visual Literacy** and **Artistic Expressiveness** is **0.16** for the CG and **0.17** for the EG. The distribution of grades shows that in the CG, **4%** are high, **15%** are good, **68%** are satisfactory, and **13%** are unsatisfactory, while in the EG, **6%** are high, **14%** are good, **70%** are satisfactory, and **10%** are unsatisfactory.
- **Artistic Knowledge: 28%** of the CG and **25%** of the EG show a high level of knowledge about the types of arts and genres.
- **Visual Representations, Associative and Combinatory Thinking, and Imagination:** In both groups, approximately 1/4 of the students create original and fantasy images, while nearly half fail to construct complete and meaningful solutions.
- **"Color Standards" Method (Emotional Response to Artworks):**
    - "Like very much": 25% CG, 20% EG
    - "Like moderately": 32% CG, 30% EG
    - "Cannot judge": 14% CG, 16% EG
    - "Like little": 18% CG, 20% EG
    - "Do not like": 11% CG, 14% EG

Summary: The results of the ascertaining stage indicate that the control and experimental groups are at a comparable level, with no clear

dominance by either. Approximately 1/4 of the students in both groups demonstrate skills for independent planning and control in visual activity. The results across the criteria for visual literacy and artistic expressiveness are similar (CG: 0.17/0.16; EG: 0.17/0.17). A high level of artistic knowledge is held by 28% of the CG and 25% of the EG. About 1/4 of the students demonstrate original associative thinking and imagination, while almost half fail to construct complete solutions. According to the "Color Standards" method, the emotional response to the artworks is similar between the groups, with slight differences in preferences for dark red.

3.3. Forming Stage

3.3.1. Theoretical Setting of the Experiment

The **Forming Stage** is an essential part of the experimental research, as it allows for the approbation of a system-model of lessons with integrated digital technologies in Fine Arts education. The aim of this stage is to develop the **visual-creative abilities** of the students in the Experimental Group by stimulating their emotional and sensory responsiveness, visual representations, associative and combinatory thinking, and productive imagination. Artistic activity is viewed as a cognitive and emotional-aesthetic process where the student acquires knowledge through creative experience, and the integration of digital technologies enriches the traditional methodology with new possibilities for visualization, experimentation, and independent work.

Objectives of the Forming Stage:

1. To approve a system-model of Fine Arts lessons for **VI grade**, fully compliant with the curriculum but augmented through the use of digital technologies.
2. To create conditions for the development of students' **visual-creative abilities** through the use of digital means of expression, materials, and techniques.
3. To foster a sustained interest in contemporary artistic practices and digital forms of art.
4. To stimulate the ability for **teamwork** in a digital environment and for solving problem situations arising during creative experimentation.

Main Tasks:

To achieve the objectives, the following pedagogical activities are implemented:

- Acquiring knowledge about contemporary digital forms of artistic creation and their emotional perception.
- Clarifying the connection between digital means of expression, virtual materials, and working techniques.
- Building technical and constructive skills for working with specialized software and mobile applications (graphic editors, presentation programs).
- Expressing own thoughts, feelings, and aesthetic attitudes toward the environment through digital images.
- Developing associative, combinatory, and variable thinking through digital visual tasks.
- Forming the capacity to solve problem situations in a digital environment.
- Stimulating collaborative work and team creativity through cloud platforms and shared digital spaces.

Didactic Model

The structural model of lessons with integrated digital activities is built in accordance with the principles of artistic-aesthetic education and the cognitive tasks:

- Formation of personal qualities (creativity, aesthetic sensitivity, critical thinking).
- Acquiring knowledge about contemporary artistic practices through digital tools.
- Stimulation of teamwork in digital platforms and virtual classrooms.

Expected Outcomes of the Forming Stage

It is theoretically assumed that the application of the system-model of digital lessons will lead to:

- Development of students' visual-creative abilities and imagination.
- Improvement of skills for working with drawing and processing software.
- Building skills for the rational organization of the digital workspace.

- Development of critical analysis of own and others' digital artworks.
- Integration of Fine Arts with other disciplines (Literature, Technologies, Natural Sciences).

3.4. Control Stage

3.4.1. Theoretical Setting of the Experiment

The **Control Stage** holds key significance within the experimental research, as it provides an opportunity to evaluate the effectiveness of the applied methods and technologies in Fine Arts education. It is conducted with both the Experimental and Control Groups, representing the concluding phase of the experimental cycle, and allows for tracking both the quantitative and qualitative changes in students' artistic preparedness.

It is based on the principle of comparison between the entry level of artistic preparedness (Ascertaining Stage) and the level achieved after the pedagogical intervention (Forming Stage). Thus, the Control Stage functions as a kind of "barometer" for the effectiveness of the overall pedagogical process.

The theoretical foundation is built upon the concepts of developing creative thinking and creativity, on the psychological and pedagogical approaches for forming visual literacy and aesthetic culture in children, as well as on the methods for transferring knowledge and skills from traditional to digital forms of artistic expression.

Particular attention is paid to the dynamics in the acquisition of artistic knowledge and its application in practical activity, which reflects not only the artistic-educational preparedness but also personal development—imagination, originality, and independence.

Digital technologies are viewed as an essential factor for activating creative self-expression and stimulating students' **visual-creative abilities**.

The analysis of the results from the diagnostic observation, which ascertains students' ability to perceive works of fine art, allows for a more detailed evaluation of their artistic preparedness and tracking the changes in the level of visual literacy and aesthetic culture. Based on these results, specific aims and tasks are formulated through which the final verification of the achieved knowledge, skills, and competencies is carried out.

Objectives of the Control Stage:

1. To diagnose the **exit level** of students' **visual-creative preparedness** according to pre-defined criteria and indicators, utilizing the appropriate toolkit.
2. To determine the **exit level** of students' **artistic knowledge** and their ability to perceive works of fine art, as well as the degree of mastered theoretical and artistic knowledge related to genres, types of fine arts, means of expression, materials, and techniques, including digital ones.
3. To determine the **exit level** of **visual-creative abilities**; the richness of visual representations; associative, combinatory, and variable thinking; and reproductive and productive imagination of the students in the CG and EG.
4. To conduct **diagnostic observation** to ascertain the exit level of students' attitudes, skills, and behavior in artistic-creative activity, and to establish their independence, perception, and creative activity during the execution of different genre tasks.

Main Tasks:

For the purposes of the experimental research, the task is set to organize and conduct an exit diagnosis, demonstrating the level of **visual-creative preparedness** of the sixth-graders, taking into account the following requirements:

- To conduct 6 Fine Arts lessons, utilizing different forms of visual activity (by memory, by impression, by imagination), diverse visual materials (watercolor and tempera paints, ink, markers, pastels, and pencils, clay, modeling clay, and plasticine), various execution techniques, and different genres.
- Students must work independently, without being guided, assisted, or corrected, after being provided with the necessary instructions (requirements).
- Upon completion of the independent visual activity, all student artworks must be analyzed and evaluated differentially according to specified criteria and indicators and the corresponding measuring instrument. Using the **Formula of the Polarity Method from the Projective Methodology**, to calculate the comparatively objective coefficient of visual-creative preparedness for each sixth-grader.

- The data obtained from the conducted lessons must be entered into a table containing the names of the 6th-grade students and interpreted according to the specific indicators for assessing their visual literacy and artistic expressiveness.
- Concurrently, **diagnostic observation** must be carried out during the visual activity in 3 of the planned lessons.

Verification of Students' Artistic Knowledge:

To accomplish this task, the diagnostic procedures involve a questionnaire—the **"Final Non-verbal Multiple-Choice Questionnaire"**, the **"Color Standards"** method from the projective methodology, and diagnostic observation (in 3 lessons) for the perception of works of fine art.

Test for Investigating Students' Cognitive Processes and Creativity:

The diagnostic task includes the application of an adapted **Rorschach Test**.

Expected Outcomes of the Control Stage

It is theoretically assumed that the Control Stage will allow for:

- Establishing the degree of development of **artistic knowledge and skills** at the end of VI grade.
- Verifying the **sustainability** of acquired competencies and their application in creative practice.
- Assessing the progress in **creativity, associative, and combinatory thinking**.
- Establishing the **effectiveness** of the pedagogical strategies used and their reflection on students' artistic literacy and expressiveness.

The Control Stage provides a reliable empirical basis for proving or refuting the main theoretical hypotheses of the research, with the results showing a distinctly **higher level of achievement** in the Experimental Group compared to the Control Group, and a significant superiority of the EG across all examined indicators:

- **Visual Activity (Artworks):** The arithmetic mean numerical coefficient for the indicators of **Visual Literacy** and **Artistic Expressiveness** is **0.36** for the Experimental Group (EG), which corresponds to a **"Good"** assessment, and **0.18** for the

Control Group (CG), which falls within the range for a **"Satisfactory"** assessment. The results for both groups outline a good foundation for improvement, with the EG demonstrating higher achievements. In the EG, **39%** of students have high scores (Excellent), **33%** are good, **20%** are satisfactory, and **8%** are unsatisfactory. In the CG, **12%** of students received high scores, **29%** are good, **51%** are satisfactory, and **11%** are unsatisfactory. This indicates that the EG achieves better results than the CG on key indicators of visual activity.

- **Diagnostic Observation:** The conclusion that can be drawn after the diagnostic observation is that across all five indicators—planning of own visual activity, correspondence between requirements and independent visual activity, conscious perception and understanding of the visual task, self-control during execution, and self-assessment from the perspective of the requirements—the students from the EG demonstrate **higher results** compared to the CG. The average values of the coefficient **K** for the CG correspond to a **Satisfactory** assessment, while for the EG, they correspond to a **Good** assessment.
- **Artistic Knowledge: 30%** of the CG and **38%** of the EG show a high level of knowledge about the types of arts and genres.
- **Visual Representations, Associative and Combinatory Thinking, and Imagination:** The summarized data from the adapted Rorschach Test show significant differences in the quality of the drawings when comparing the CG and EG. In the CG, the highest share is occupied by unsatisfactory scores (**75.93%**), while the share of satisfactory scores is significantly lower (**14.81%**). Even fewer artworks received a good (**5.56%**) and a high (**3.7%**) score. The average coefficient **K=0.22** corresponds to a satisfactory assessment and indicates rather limited results. A different picture is observed in the EG—here, the largest share is of drawings with a good score (**33.33%**), followed by those with an unsatisfactory (**31.48%**) and satisfactory (**29.63%**) score. Although high scores are the least numerous (**5.56%**), the overall tendency is toward better

performance. The average coefficient **K=0.38** is defined as a **Good** assessment and shows a distinct progress compared to the CG.

- **"Color Standards" Method (Emotional Response to Artworks):** To study students' attitude toward contemporary works of visual arts, the "Color Standards" method was used with red color in three nuances and the poles white–black, through which the sixth-graders evaluate how much they like or are indifferent to the artworks. The obtained data show that **25%** of the CG and **30%** of the EG give their "emotional response" by rating the artworks they like with a dark nuance of the red color. The largest share is held by students who state that they "like moderately" the reviewed artworks—**32%** of the CG and **35%** of the EG. Another part—**14%** of the CG and **10%** of the EG—cannot judge whether they like the artworks. The results for students who "like little" the works are also approximately close—**18%** of the CG and **20%** of the EG. In conclusion, **11%** of the CG and **5%** of the EG state that they "do not like" the artworks.

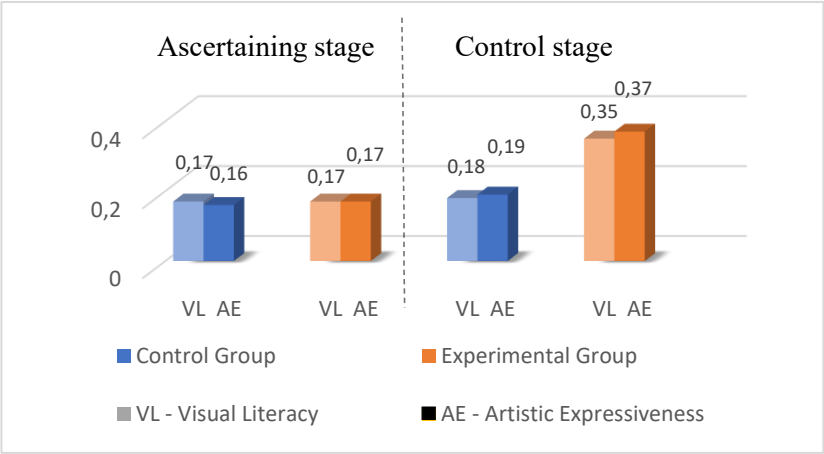
Conclusion: The Experimental Group demonstrates **higher achievements** across all examined indicators compared to the Control Group. The students from the EG achieve better results in visual literacy, artistic expressiveness, and the quality of the drawings, as well as a more positive emotional response to digital artworks. This confirms that the applied methodology has a **positive impact** on the development of their creative abilities and artistic-aesthetic culture.

3.5. Comparative Analysis of Results from Students' Visual Activity

Comparing the visual results of the students (from the ascertaining and control stages) shows a significant increase in the obtained **arithmetic mean numerical coefficient** across both criteria (**Visual Literacy** and **Artistic Expressiveness**) for the students in the Experimental Group (EG). In contrast to this group, the students in the Control Group (CG) show an insignificant increase in the value of the arithmetic mean numerical coefficient in the control stage, which

reflects the level of their visual results across the two criteria. The results are graphically reflected in **Diagram 1**.

Diagram 1
Comparative Presentation of Results from Students' Visual Activity by Arithmetic Mean Numerical Coefficient (K) across the Two Criteria



Based on the results obtained, the following conclusions can be drawn:

1. In students' artworks, neither of the two criteria—**Visual Literacy** nor **Artistic Expressiveness**—predominates.
2. The quality of children's artworks—their content, compositional and color solutions, manner of form construction, manifested sense of rhythm and balance—is directly related to the students' possessed **Visual Literacy** and **Expressiveness**. Thus, the potential for students to create more interesting and more original artworks is greater.
3. The developed methodology for investigating the results of students' visual activity—including criteria, indicators, and toolkit—provides teachers with the opportunity to analyze and evaluate children's artworks comparatively objectively and draw specific conclusions.
4. Comparing the data of the two groups from the diagnostic

observation during visual activity (**Diagram 2**), it shows that the students from the **Experimental Group (EG)** significantly improve their results regarding their possessed skills, qualities, and abilities in **planning, perception, self-control, and self-assessment** concerning the visual task.

Comparative Analysis of Diagnostic Observation Results

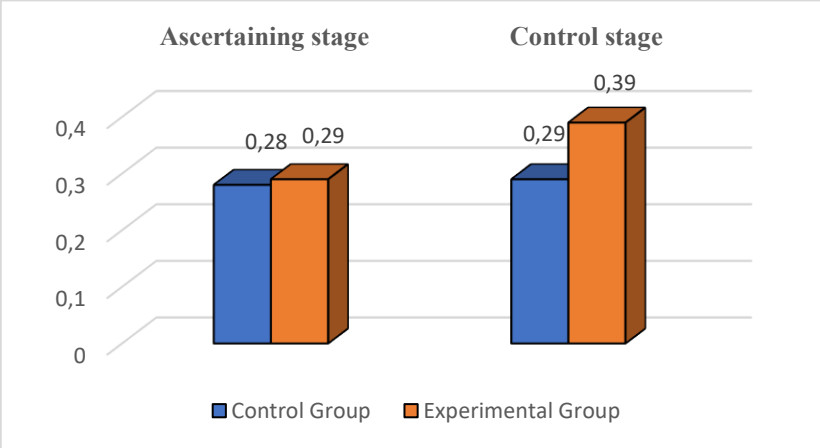
During the **Ascertaining Stage**, the average values of the coefficient **K** for the diagnostic observation were assessed as **"Satisfactory"** in both groups—the Control Group (CG) and the Experimental Group (EG). Approximately one-quarter of the students exhibited skills for independent planning and control in visual activity, which indicates that, at this stage, the students possessed basic but still limited skills for organizing and self-assessing their work.

In the **Control Stage**, the results show clearly defined differences between the groups. Across all five indicators—planning of visual activity, correspondence between requirements and independent work, conscious perception and understanding of the visual task, self-control during execution, and self-assessment against requirements—the students from the **Experimental Group (EG)** demonstrate **higher results** compared to the CG. The average values of **K** for the CG continue to correspond to a **"Satisfactory"** assessment, while for the EG, they are **"Good."** This indicates that, during the instructional process, the Experimental Group acquired more advanced skills for independent organization and control of visual activity, whereas the CG maintained a moderate level of mastery of these skills.

The comparative analysis reveals that in the **Ascertaining Stage**, the two groups had similar results, while in the **Control Stage**, the Experimental Group achieved significantly better results, demonstrating higher **independence**, **conscious task execution**, and **effective self-control**.

Diagram 2

Comparative Presentation of Results from Students' Diagnostic Observation during Visual Activity by Arithmetic Mean Numerical Coefficient (K)



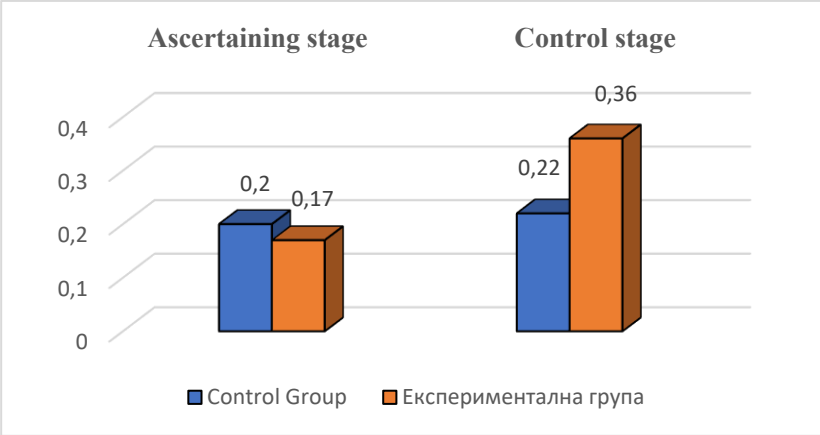
3.6. Comparative Analysis of Students' Artistic Knowledge Level

The comparative **Diagrams 3, 4, and 5** reflect the change in the numerical coefficient **(K)** during the experimental research with respect to students' acquired **Artistic Knowledge** and their ability to perceive works of fine art. The data obtained from the **Ascertaining Stage** show close numerical values, and according to the transformed numerical value of **(K)** into a verbal assessment, the students' assessment in both groups is **"Satisfactory,"** which reflects their level of cognitive activity and experience in perceiving works of fine art.

In the **Control Group (CG)**, a lower result of **0.22** is reported, while in the **Experimental Group (EG)**, the result is **0.36**. This marks a substantial difference in the achievements of the two groups in the control stage of the research, registering the **preponderance of the EG** over their peers in the CG regarding the level of acquired artistic knowledge.

Diagram 3

Comparative Presentation of Students' Results by Numerical Coefficient (K) from the "Non-verbal Multiple-Choice Questionnaire" (Ascertaining Stage) and the "Final Non-verbal Multiple-Choice Questionnaire" (Control Stage)



Comparative Analysis of Results using the "Color Standards" Method

In the **Ascertaining Stage**, when studying the students' attitude toward works of visual arts using the **"Color Standards" Method**, the results of the Control and Experimental Groups were similar: the largest share was occupied by students who **"like the artworks moderately"** (**32% CG** and **30% EG**), and the positive and negative assessments were distributed evenly, with a portion of the students finding it difficult to give a clear judgment.

In the **Control Stage**, again using the **"Color Standards" Method**, the results for the Control Group remained largely unchanged, while the Experimental Group showed a **clearly defined tendency toward more positive attitudes**: the proportion of students with a positive emotional response increased (from **20% to 31%**), and the percentage of those who do not like the artworks decreased (from **14% to 5%**). This indicates that the applied experimental methodology had a **positive influence** on the perception of artistic works.

Diagram 4

Comparative Presentation in Percentages of the Results of the Students from the Experimental Group (EG) from the Ascertaining Stage and the Control Stage

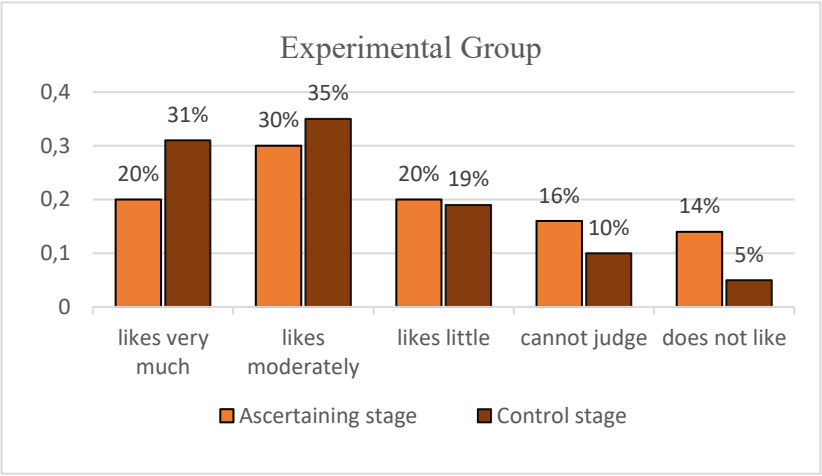


Diagram 5

Comparison in % of the Results of the Students from the Control Group (CG) from the Ascertaining Stage and the Control Stage

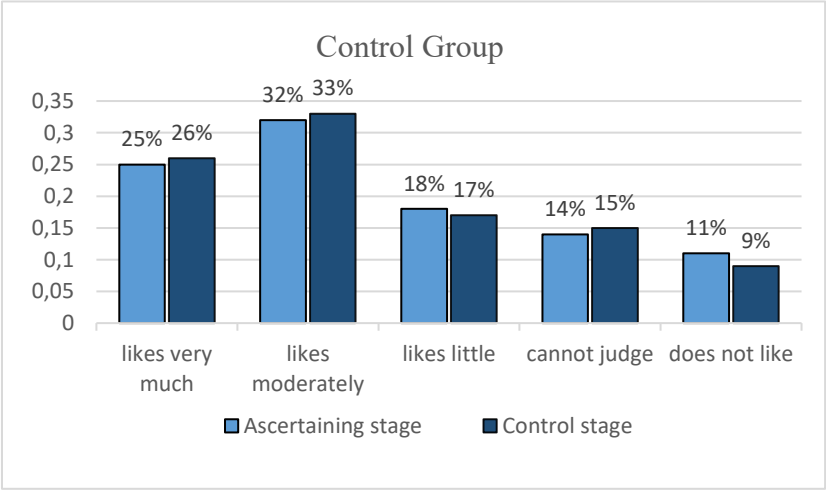
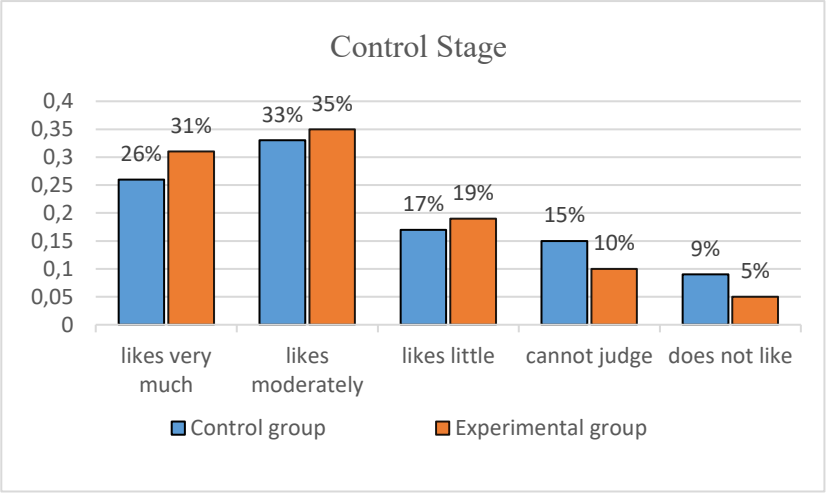


Diagram 6

Comparative Presentation in % of the Results of the Students from the "Color Standards" Method (Control Stage)



3.7. Comparative Analysis of the Level of Visual Representations, Associative and Combinatory Thinking, and Imagination of Students

The analysis of students' drawings from the adapted **Rorschach Test** at the end of the experimental research (Control Stage) indicates that the students from the **Experimental Group (EG)** significantly increase the degree of development of their cognitive psychological processes and creativity—visual representations, associative, variable thinking, and imagination. With the help of the comparative **Diagram 19**, the change in the numerical coefficient **(K)** can be tracked, establishing that at the beginning of the research (**Ascertaining Stage**), the level of cognitive psychological processes and creativity in both groups was approximately equal and within the limits of the **"Satisfactory"** verbal assessment. By the end of the experimental research, it is already different, and according to Yu. Wendeler's four-point scale for transforming the numerical coefficient into a verbal assessment, it is determined as **"Satisfactory"** for the **Control Group (CG)** and **"Good"** for the **EG**.

Comparing the received percentage results of the two groups from the three tests in the control stage (**Diagrams 20, 21**), it is established that the number of students from the **EG** who received a **"High"** verbal assessment is significantly greater than their peers in the **CG**. The students from the **EG** (comparing their results with the ascertaining stage) received approximately **twice as many "High" scores**, and those with an **"Unsatisfactory"** score were **reduced by half**.

From the results of the research, it can be concluded that visual-creative tasks of this type are suitable for students, provided that preliminary developmental preparation and methodological consistency have been implemented. The results also prove a significantly improved degree of development of the cognitive psychological processes.

The summarized accounting of the results from the adapted **Rorschach Test** at the end of the experimental research shows distinct differences between the Control Group (**CG**) and the Experimental Group (**EG**).

At the beginning of the research (**Ascertaining Stage**), both groups showed approximately equal results, falling within the limits of the **"Satisfactory"** assessment. The average values of the coefficient **K** were close and did not show a significant difference.

However, a different picture is observed at the end of the experimental stage. In the **CG**, the largest share is occupied by **"Satisfactory"** and **"Unsatisfactory"** scores, with the average coefficient **K** remaining within this boundary. In the **EG**, on the contrary, the share of drawings that received a **"Good"** and **"High"** score significantly increases, which indicates a distinct progress in their creative and visual thinking. The average coefficient **K** for the **EG** increases and is determined as **"Good."**

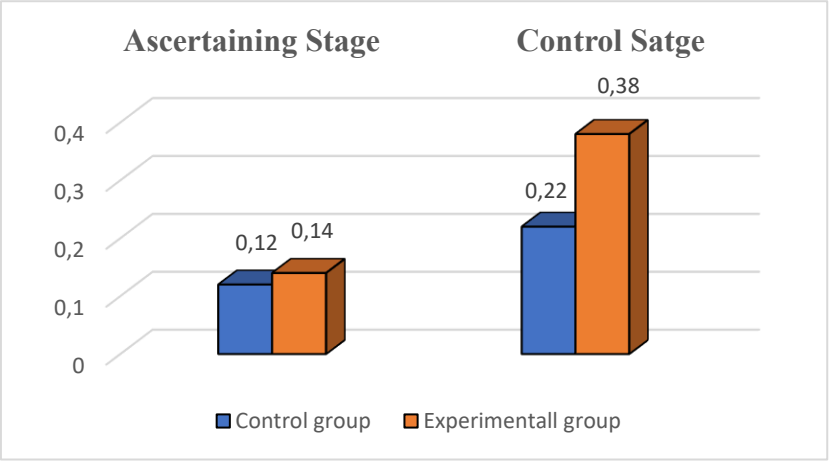
The comparative analysis shows that in the **CG**, the number of students with **"Unsatisfactory"** results remains high, while this proportion significantly decreases in the **EG**. Simultaneously, the number of students with **"High"** scores increases, which is evidence of better expressiveness, more developed imagination, and more successful visual transformation of the assigned objects.

The obtained results prove that the application of the visual-creative task as a diagnostic tool stimulates **creativity**, develops

associative thinking, and supports the overall development of students' visual and creative thinking.

Diagram 7

Comparative Presentation of Students' Results by Numerical Coefficient (K) from the H. Rorschach Test



CONCLUSION AND FINDINGS

The issue of applying **digital technologies** in Fine Arts education at the lower secondary stage (V–VI grade) is particularly relevant today, as it brings to the fore the popularization of contemporary forms of artistic expression, which act as a natural continuation and alternative to the traditional, material-means-limited classroom instruction. The correct and appropriate use of digital resources, the technical provision of the school, and the teacher's training, all aligned with students' age and interests, contribute to a more wholesome and effective educational process in Fine Arts.

The analysis of the experimental research confirmed the established **hypothesis**: **"If digital technologies are included in the Fine Arts education of V and VI grade, students' creative thinking and imagination will be enhanced, and their visual-creative abilities will be developed."**

It was established that the application of digital technologies in Fine Arts instruction during the **Forming Stage** of the experiment significantly contributes to activating students' aspiration for creative self-expression, develops their **visual-creative abilities**, and raises the level of their visual culture. The results from the **Control Stage** of the experiment showed statistically significant improvements in the achievements of the **Experimental Group** compared to the Control Group, which is a clear indicator of the effectiveness of the developed methodological system.

In the present dissertation, a **system-model of lessons** utilizing digital technologies to enhance creativity was implemented in the Forming Stage. As a result of the theoretical analysis, the main concepts related to the topic were defined: "digital technologies," "digital art," "interactive environment," "visual communications," and "creative digital practices." These are not intended for acquisition as theory by the students but are important for building and increasing the specialized training of Fine Arts teachers who wish to work in this area. The developed methodology for diagnosing the effectiveness of applying digital technologies in Fine Arts instruction (V–VI grade) includes specially designed didactic materials and an assessment toolkit. These allow for comparatively successful observation of students' creative activity, evaluation of their artistic results, tracking

the perception of art works, and establishing the level of acquired visual-creative skills. The high results obtained from their approbation provide grounds to accept that teachers can effectively use this system in real pedagogical practice.

The effective implementation of the Fine Arts educational process with digital technologies depends on the professional training and pedagogical competence of the teacher. The quality of the results is determined by their ambition to improve, apply current knowledge, and systematically organize instruction in a digital environment. This requires high competence, including skills for working with modern software programs for graphic processing, video editing, 3D modeling, and animation.

In conclusion, the following findings can be formulated:

1. Based on an in-depth review of the scientific literature, an **author's concept** was constructed, offering a theoretical justification and a model for applying specific methodological ideas that support the effective acquisition of educational content. The model is aimed at the optimal use of digital technologies to stimulate and develop the **visual-creative abilities** of V–VI grade students within the investigated period.
2. Students' **visual-creative preparedness and artistic knowledge** develop in both groups (CG and EG), but the progress in the **EG is significantly more pronounced** due to the integration of digital technologies into Fine Arts instruction. Based on the analysis of the experimental research results, it can be concluded that the use of digital means has a positive influence on students' **motivation**, stimulates their emotional development, and supports the formation of value orientations in the field of art education.
3. The obtained results from the experimental research indicate that the developed **system-model of lessons** using digital technologies proves to be an effective component of the teacher's pedagogical toolkit. It contributes to the acquisition and development of students' visual-creative abilities, encouraging their **originality, non-standard approach, and self-initiative**. Data from the final stage of the experiment show that the achievements of the students in the **EG surpass** those of the **CG**.
4. The use of **digital technologies** in instruction leads to **higher**

results in the **EG** compared to the **CG**. Digital means support the development of practical and cognitive skills by stimulating **collaboration, activity, critical thinking, and creative problem-solving**. In Fine Arts classes, combining traditional and digital practices enriches artistic knowledge, develops imagination and creativity, with these positive effects being distinctly more strongly expressed in the **EG** compared to the **CG**.

5. Digital technologies **expand interdisciplinary connections**, linking Fine Arts with other curriculum areas. The results of the experimental instruction show that students from the **EG integrate knowledge and skills from various subjects more successfully** than the **CG**, leading to a more complex development of digital competencies. The application of digital technologies has a stronger impact on interdisciplinary connections specifically in the **EG**.

The performed analysis of the research results and the resulting findings provide grounds for the following **recommendations**:

Recommendations

1. It is necessary to expand the variety of methods and approaches for integrating **digital technologies** into Fine Arts education in order to stimulate students' interest and visual-creative culture. A solution is the implementation of innovative forms such as **online contests, virtual exhibitions, and school digital galleries**, which popularize student achievements and encourage creativity. Furthermore, requirements should be introduced in the curricula and regulatory documents aimed at developing **digital creativity and literacy** as core student competencies.

2. It is recommended that, where possible, Fine Arts teachers purposefully include the viewing and analysis of **digital art works** in the educational process, with the aim of expanding students' visual culture and stimulating their creative activity. As a solution for implementing this recommendation, the use of specialized digital platforms, virtual galleries, and educational resources that provide access to diverse examples of contemporary digital creativity can be applied, as well as the integration of short practical tasks related to the observed art works.

3. Schools need to ensure **adequate technical and technological**

infrastructure, including modern digital devices and specialized software for artistic and creative activity, with the goal of effectively applying digital technologies in Fine Arts instruction and stimulating students' visual-creative abilities.

In conclusion, it can be emphasized that the developed model of Fine Arts lessons with integrated digital technologies has the potential to qualitatively change art education and serve as a **promising alternative** for creative work in school. The research proves its successful applicability with students in V and VI grade and outlines the possibility for **upgrading through new experimental developments**, which opens a perspective for future scientific research in the field of digital technologies in Fine Arts education.

SCIENTIFIC CONTRIBUTIONS OF THE DISSERTATION

1. The theoretical research involves the systematization and classification of digital arts, analyzing their essence, technologies, means (tools), and forms, as well as the possibilities for their application in visual arts education.

2. The role of digital technologies in visual arts education and their influence on the development of visual and creative abilities were substantiated/justified.

3. A diagnostic toolkit was developed and approved (piloted/validated) for the investigation and assessment of students' visual and creative abilities, and indicators for evaluating digital student artworks were established.

4. An author's system-model of visual arts lessons for 5th–6th grade was created and approved (piloted/tested), utilizing a variety of digital resources and tools: smartphone applications for image creation and processing, the Liquify filter in Adobe Photoshop for creative transformations, PowerPoint for preparing presentations, and Paint for creating illustrations and projects.

5. An experimental study was conducted, which proves/demonstrates that the use of digital technologies stimulates students' imagination, the development of their artistic knowledge, the level of their visual representations (mental imagery), as well as their associative and combinatorial thinking.

LIST OF PUBLICATIONS ON THE DISSERTATION TOPIC

1. Stefanov, P. (2020). **Digital Technologies in the Context of Fine Arts**. In *The Contemporary Discourse in Science: Doctoral Conference Proceedings, October 23–24, 2020, Shumen* (pp. 726–739). Shumen: Konstantin Preslavsky university of Shumen Publishing House. ISSN 1314-6769.

2. Stefanov, P. (2020). **Development of Visual-Creative Abilities of Students in V–VI Grade through Digital Technologies**. In *Collection of Scientific Works of Students and Doctoral Students from the Faculty of Pedagogy* (Electronic Edition, pp. 62–67). Shumen: Konstantin Preslavsky university of Shumen Publishing House.

3. Stefanov, P. (2021). **Psycho-Pedagogical Characteristics of the Digital Generation (V–VII Grade)**. In *Doctoral Conference Proceedings, November 12–13, 2021, Shumen* (pp. 628–637). Shumen: Konstantin Preslavsky university of Shumen Publishing House. ISSN 1314-6769.