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Testing of the Master-Class Methodology in Teaching Artistic Disciplines in Higher Education Institutions

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Abstract

The purpose of the study is to establish the effectiveness of the master class methodology for the formation of knowledge, practical skills, creative competencies, and reflective abilities of students of various art specialties. The design of the study is experimental with cluster randomization. The sample included 211 students of five art specialties, divided into experimental (n = 108) and control (n = 103) groups. A two-version pre–post test in art disciplines, expert evaluation of creative works according to 4 criteria (originality, technical excellence, innovation, integrity of the idea), and standardized motivation questionnaires were used. T-tests, a mixed linear model, and calculation of effect sizes were used to analyze the data. At the initial stage, no significant differences between the groups were found ($p > .05$). After a five-month intervention, students in the experimental group demonstrated significantly higher scores in knowledge and practical skills ($g = 1.21$), quality of creative work ($g = 1.20–1.56$), motivation and reflective skills ($p < .01$). It was found that the effectiveness of the method is modified by specialty, course of study and previous artistic experience, with the greatest effect recorded among design students and those who had no previous artistic training. The study confirmed that the master class method is an effective tool for improving art education, as it combines learning knowledge, developing creativity, and forming reflection.

Keywords: master classes, art, higher education, student creativity, practice-oriented learning, pedagogical innovations, artistic competence

1. Introduction

1.1 Introduce the Problem

The current conditions of higher education reform in the context of Ukraine's integration into the European educational space have influenced the search for effective methods of teaching art disciplines in higher education institutions (HEIs). Trends in the development of modern arts education are aimed at forming not only the professional competencies of future specialists, but also their worldview, ability to think creatively, and artistic and creative self-realisation. However, in modern pedagogical practice, there is still a contradiction between traditional teaching methods, which are based mainly on reproductive forms of work, and the need of modern society to train mobile and innovative-oriented

specialists. A vital tool for overcoming this contradiction is the master class methodology. The latter allows for the integration of elements of the traditional learning process (lectures, demonstrations, practical tasks) and modern approaches based on the principles of individualisation and activation of student activity.

Contemporary scientific literature indicates that master classes create conditions for direct contact with professionals and immersion in a creative atmosphere, which in turn influences the development of new knowledge and skills based on interactive communication (Wang, 2021; Lysenko et al., 2025). Previous research in the field of art education has shown the effectiveness of master classes in the professional training of artists, musicians, actors, and other creative professionals (Kovalenko, 2024; Pavlou & Castro-Varela, 2024). This necessitates further scientific research and creates the prospect of a new pedagogical experience that is of significant theoretical and practical importance. The main problem facing contemporary arts education is the lack of a unified model for the use of the master class methodology in higher education. There is a need to standardise the educational process in accordance with the requirements of educational programmes; on the other hand, arts education requires flexibility, the individualisation and consideration of students' personal creative abilities. The relevance of the study is determined by the development of an effective and reasonable approach to the implementation of master classes in the system of training future specialists in the arts. Thus, the importance of this study is determined by the need to modernise arts education in higher education institutions, as they must now meet the challenges of the creative economy and European quality standards.

1.2 Describe Relevant Scholarship

Modern scientific literature indicates the necessity of involving innovative methods for developing the competencies of future artists. At the same time, in the conditions of a long search for innovative methods, the transition of education to a person-oriented basis, contradictions in the space of art education are becoming more acute. It is indicated that this concerns the contradiction between directing students to independent mastery of the curriculum and the preservation of artistic educational traditions (Schatt, 2024; Poole & Norton, 2023; Sandberg, 2024). The latter contribute to the acquisition of the values of visual heritage, which are shaped by established academic traditions. At the same time, as noted in other studies, recognition of the risks associated with re-evaluating the role of visual education traditions prompts the emergence of various factors which, in the context of higher education reform, enable this conflict to be addressed through the development of new methods (Novak, 2019; Luo et al., 2024). Besides, recent research in the field of arts education indicated that pedagogical models are constantly changing under the influence of digitalization, the COVID-19 pandemic, and the transition to practice-oriented learning. Li et al. (2021) and Konovalenko et al. (2020) proved that hybrid pedagogy is an important tool for addressing the challenges of the pandemic in the field of performing arts. Recent research has focused on technological solutions. However, the issue of the effectiveness of master class methodology in the classical format of higher education remains understudied (Sickler-Voigt, 2019).

In music pedagogy, considerable emphasis is placed on the dynamics of teacher-student interactions. Li & Timmers (2021) demonstrated that tonal and timbre nuances can be effectively cultivated through pedagogical engagement. Concurrently, Mateos-Moreno, García-Perals & Maxwell (2025) established the importance of deliberate and productive practice within individual instructional settings. While both studies underscore the significance of one-on-one lessons, group formats such as master classes have received comparatively limited scholarly attention. However, research by Wang (2021) and Yin (2023) highlighted innovative strategies in group piano instruction, offering a foundation for evaluating the benefits of collective learning environments. The issue of developing creativity in art education has become the subject of attention of recent works. Lukovska (2024) identified the interaction of the roles of composer, performer, and teacher in the system of forming creative potential. Separately, the study of Yan & Rybalko (2022) and Akhmetova et al. (2025) indicated the readiness of students for creative self-realization through an acmeological approach. Besides, the study of Oo et al. (2024) showed that design-oriented learning allows for increasing the level of motivation of students. However, in these works, creativity is described in the broader space of art or design education, however, without a systematic analysis of the master class methodology itself. In the field of contemporary fine art and design, O'Neill (2025) presented a case study of the implementation of practice-oriented methods in fine art education. This study is an important basis for this; although it does not directly emphasize the importance of master classes, it is proven that practice-oriented forms allow for an increase in the involvement of students. Zhang et al. (2025) described the specific importance of using modern technologies for the development of art education. This confirmed the existence of an important trend in scientific space - the integration of the latest tools into art pedagogy. At the same time, there is a lack of empirical experimental studies that would quantitatively assess the effectiveness of traditional pedagogical formats, such as the master class, in modern educational conditionsThe analysis of the literature revealed several gaps. First, the existing studies pay significant attention to technologies and alternative pedagogical approaches, but do not sufficiently evaluate the master class as a systemic methodology in higher art education. The proposed study is designed to fill this gap and provide a meaningful empirical assessment of the master class methodology in various art specialties.

1.3 Hypotheses and Aim

The main hypothesis of the study was the assumption that targeted testing of the master class methodology in teaching art disciplines in higher education institutions will contribute to increasing the level of formation of professional and creative competencies of students. An additional hypothesis is the idea that the systematic use of master classes increases learning motivation, develops the ability to conduct independent artistic research activities.

Thus, the purpose of the study is to test and scientifically substantiate the effectiveness of the master class methodology in teaching art disciplines in higher education institutions. The implementation of the tasks will allow improving the educational process and training competitive specialists who are capable of creative self-expression.

The main research questions are as follows:

1. Does the master class methodology provide a high level of knowledge acquisition and the formation of practical skills in artistic disciplines?

2. Does the use of the master class methodology affect the quality of students' creative works compared to the control group?

3. How does the master class methodology contribute to the growth of learning motivation and the development of students' reflective skills?

4. What factors (gender, specialty, previous artistic experience, course of study) affect the effectiveness of the master class methodology?

The theoretical significance of the study will be to expand scientific ideas about interactive and innovative methods in teaching art disciplines, as well as in the development of the categorical apparatus of art pedagogy. The practical significance of the article is provided in the possibility of using the obtained results in the creation of educational and methodological materials.

2. Method

2.1 Research Design

In this study, an experimental design was chosen, since it most adequately meets the set goal - to verify the effectiveness of the master class methodology in teaching art disciplines in higher education institutions. The experimental approach made it possible to compare clearly defined independent and dependent variables, the ability to control the conditions of the educational process, and to obtain empirical data that provided scientific verification of hypotheses.

This design was chosen from the point of view that it made it possible to provide a direct comparison of the results of students' learning using the traditional method and using the method that involves the systematic use of master classes.

The experimental study was carried out in several stages:

The ascertaining stage – the initial level of students' training, their motivational attitudes, and basic knowledge in the field of art disciplines was identified.

The formative stage – the master class methodology was introduced into the educational process and tested in a real educational environment.

The control stage – the results were evaluated and compared with the initial data.

2.2 Sample and Participants

The study sample was formed according to the principle of purposeful selection. This is because the object of the experimental test was a specific contingent of students of art specialties of higher education institutions who are directly involved in the process of professional art training.

The sample included 211 students studying in various undergraduate and graduate courses. Among them are representatives of such specialties as music, fine arts, design, choreography, and theater arts. In particular, the study involved:

- 55 students of the “Musical Arts” major, who are studying vocals, instrumental performance, and musicology.
- 47 students of the “Fine Arts” major, specializing in painting, graphics, and sculpture.
- 42 students of the “Design” major, focused on graphic, industrial, and multimedia design.
- 38 students of the “Choreography” major, working in the fields of classical, folk, and modern dance.
- 29 students of the “Theatrical Arts” major, who are training as actors, directors, and theater teachers.

The gender composition of the sample is relatively balanced: about 60% are women and 40% are men. This division

generally showed the general trends in recruitment to art specialties.

The age ranged from 18 to 24 years. This, in turn, also corresponded to the typical demographic characteristics of student youth. Most students lived in urban regions, but the sample also included residents of rural areas who received basic artistic training in schools of aesthetic education or cultural centers. Some respondents combined their studies with part-time work in the field of culture and art (work in ensembles, participation in theater productions, exhibitions). However, the majority focused exclusively on their studies.

Thus, the sample of 211 students is sufficiently representative for analyzing the effectiveness of testing the master class methodology in teaching art disciplines in higher education institutions. The demographic diversity of the study participants made it possible to obtain data that can be extrapolated to a wider contingent of students.

A quasi-experimental design of the pretest–posttest type with a control group was applied. For this purpose, cluster randomization was used, as

Experimental group (EG): n = 108 – training with systematic application of the master class methodology.

Control group (CG): n = 103 – training using the traditional methodology.

Cluster randomization minimizes contamination between conditions (transfer of master class techniques by students to each other, “teacher effect”, exchange of materials) and preserves the natural organization of training (academic groups/streams/classes). The design corresponds to the realities of higher education institutions, where the schedule, teachers, and classrooms are assigned to entire groups.

Unit of randomization (cluster)

Each academic group/stream within the specialty is considered a cluster (typical size 15–25 students). The total sample of N = 211 is divided into K clusters (expected 10–14), which are randomized 1:1 to:

Experimental condition (EG) – systematic masterclass methodology.

Control condition (CG) – traditional methodology.

If the size of the clusters varies, block randomization is applied with blocks by specialty and size (small/medium/large).

To ensure basic equivalence between conditions, clusters are stratified by 1. Specialty (music, visual arts, design, choreography, theater), 2. Average pretest level (based on the results of the entrance test), 3. Average experience (proportion of students with prior artistic training).

Within each stratum, clusters are randomly assigned to EG or CG (allocation ratio 1:1). Allocation codes are maintained by a researcher who is not involved in teaching (concealment).

Prevention of contamination

Schedule and spatial separation: EG and CG classes do not overlap in time and classrooms.

Teaching protocols: CG works according to a unified syllabus without elements of master classes; EG has a full package of master class materials (checklists, rubrics, reflection scenarios).

Blinding of evaluators: experts receive coded works (without group markers).

In the formative phase, experts conduct thematic master classes only in EG clusters (so as not to violate equivalence). In the evaluation, experts act as blinded raters of works from both EG and CG (standardized rubrics: originality, technical excellence, innovation, integrity of concept).

2.3 Intervention Plan

The intervention in the study is aimed at testing the master class methodology in teaching art disciplines in higher education institutions. Its organization involved creating conditions under which students had the opportunity to learn theoretical material and actively engage in creative activity and observe the process of the teacher-master's work.

The intervention was carried out during one academic semester (5 months) and included three consecutive stages.

The formative stage was built on a combination of several methods and pedagogical techniques. In particular, the demonstration method played an important role. This method involved a master teacher demonstrating the technique of execution in real time, revealing the features of the creative process, and explaining the logic of decision-making. The practical method was because the students performed the tasks immediately after the demonstration. This made it possible to consolidate the material through direct action. The use of the “peer-to-peer” method played an important role. After the completion of each master class, a collective discussion was held, during which students discussed difficulties, their own achievements, and prospects for improvement. At the same time, the problem-solving technique played an important role. Teachers set open-ended, creative tasks for students, which encouraged them to find individual solutions.

A feature of the intervention was the involvement of external experts - practitioners in the field of art (famous artists, musicians, choreographers, directors), who conducted separate thematic master classes. Their participation ensured that students were familiarized with modern trends in art and formed ideas about professional standards and the realities of creative activity.

The invited experts also played the role of independent evaluators, as they provided conclusions on the level of formation of students' competencies and the originality of their works.

2.4 Time Organization

The formative stage included: 1 time per week - an integrated master class (2 academic hours), combining demonstration and practice; 1 time per two weeks - a meeting with an invited expert (guest lecture-master class); Besides, a collective review and discussion of student works (exhibition, concert, show) was held monthly, which was accompanied by expert evaluation (See Table 1).

Table 1. Intervention plan grid

Stage	Methods and activities	Frequency	Expected results
Confirmative	Entry testing, questionnaire, level determination	Beginning of semester	Determining the level of students
Formative	Weekly integrated master classes (demonstration + practice)	Once a week (2 academic hours)	Consolidation of knowledge through practice, development of professional skills
Formative	Guest master classes by invited experts (once every two weeks)	Once every two weeks	Acquaintance with modern trends in art, increased motivation
Formative	Monthly collective reviews and discussions of students' work	Once a month	Formation of critical reflection skills, development of creativity
Control	Summary testing, questionnaire, evaluation by experts	End of semester	Determination of the effectiveness of the methodology

2.5 Measuring Tools

2.5.1 Cognitive Achievements (Knowledge and Skills)

To assess the level of knowledge and practical skills in artistic disciplines, a two-version pre-post test (forms A and B) was used, which were equal in terms of complexity. The test consisted of 24 mixed-type tasks, including:

multiple-choice questions.

short answer tasks.

analytical tasks for interpreting a musical or artistic fragment, image, or excerpt from a dramatic text.

In addition, the main content domains covered were art theory and history, terminology, work analysis, and methods of creative interpretation. Preliminary piloting of the test on a sample of 60 people confirmed its sufficient reliability (KR-20 = .79, Cronbach's α = .81) and validity:

content validity (according to the expert panel): 5 specialists in the field of arts education.

construct validity confirmed by confirmatory factor analysis.

equivalence of forms A and B – correlation coefficient r = .74.

2.5.2 Creative Results (Quality Of Students' Work)

Students' creative achievements (musical interpretations, visual arts, design projects, choreographic performances, theatrical sketches) were evaluated using expert rubrics (0–10 points for each criterion). Four indicators were used:

Originality of the idea,

Technical perfection of execution,

Innovativeness of approaches,

Integrity and artistic expressiveness of the work.

The assessment was carried out by two independent experts who were blinded to the students' group affiliation. The agreement between the experts was high (ICC(2,k) = .82).

2.5.3 Learning Motivation and Reflection

A learning motivation scale (12 items, 5-point Likert scale) was used, which included three subscales:

internal motivation,

value-goal orientation,

self-efficacy.

The reliability in this sample was α = .82.

Self-analysis and goal setting were measured using a reflectivity questionnaire (8 items, 5-point scale). The reliability of the instrument was α = .78.

Data on age, gender, specialisation, course of study, and previous artistic experience were also collected and used as covariates in the statistical analysis.

2.6 Data Analysis

The empirical data obtained before processing went through several preparation stages. First, they were checked for completeness (dropouts, omissions, double entries). Then, the normality of the distribution was assessed (Shapiro-Wilk tests, Q-Q graphs), and outliers were identified using z-scores and boxplots.

Variables were coded (gender, specialty, course, and previous experience as dummy variables for the models).

Missing values were processed according to the Intention-to-Treat (ITT) principle, i.e., using multiple imputations that considered the cluster structure of the sample. Additionally, a Per-Protocol analysis was calculated for students with 80% of classes with attendance.

To compare cognitive data from pretest and posttest results between the experimental (EG) and control group (CG), a mixed linear model (LMM) with a random intercept for clusters and fixed effects "group", "time", "group×time" was used. Effect indicators are presented in the form of β-coefficients, confidence intervals (95% CI), p-values, and standardized effect sizes (Hedges' g).

Scores for creative results included 4 criteria (originality, technical excellence, innovation, and integrity of the idea). Their comparison between EG and CG was carried out using the t-test for independent samples and LMM (considering the cluster structure). Additionally, an integral indicator of creativity (the average of the four criteria) was calculated. To analyze the dynamics of learning motivation and reflective skills, LMM with repeated measures was used. Fixed effects: "group", "time", "group×time". The effect was calculated separately for: intrinsic motivation, value-goal orientation, self-efficacy, introspection, and goal setting.

Additionally, the total integral score of motivation and the integral score of reflexivity are presented. To determine the influence of additional factors on the effectiveness of the method, LMM was used with the interaction terms: "group × specialty" (music, visual arts, design, choreography, theater arts); "group × gender"; "group × previous artistic experience"; "group × course of study".

3. Results

The level of knowledge and practical skills acquisition was determined based on a two-version pre–post test in art disciplines (forms A and B, equivalent in complexity). The test included 24 mixed-type tasks that defined the following content domains: theory and history of art, terminology, analysis of the work, and methods of creative interpretation. Comparative analysis of the results showed that at the initial stage (pretest), no significant differences were observed between the experimental group (EG, n = 108) and the control group (CG, n = 103) ($t = 0.84$, $p = .401$). The average indicators were M = 45.7, SD = 8.9 (EG) and M = 44.9, SD = 9.3 (CG). After the five-month intervention, posttest results revealed a significant increase in knowledge and skills in EG students (M = 78.6, SD = 7.5) compared to CG (M = 62.4, SD = 8.1). A linear mixed model (LMM) built considering the cluster structure of the sample, revealed a statistically significant interaction effect of "group × time" ($\beta = 14.7$, SE = 2.1, $p < .001$, 95% CI [10.5; 19.1]). This means that the increase in results in EG significantly exceeded the increase in CG. The effect size (Hedges' g for the difference in change) was $g = 1.21$, which corresponds to a large effect. The provisions of the theory of social constructivism and practice-oriented learning, which determined the importance of active participation, demonstration, and collective reflection for the formation of knowledge, can be traced in this experiment. This can be explained by the fact that the master classes provided such an interactive form in which students not only observe, but also actively practice, receive instant feedback, and compare their own results with the works of others. The master classes were practically oriented, involving experts, practitioners, and performers. This emphasized innovative methods and technologies of teaching, developed important models of practical implementation, and used methods of variability and improvisation. Table 1 shows the dynamics of the results of the participants of the experiment.

Table 2. Dynamics of the results of mastering knowledge and skills in the control and experimental groups

Group	Pretest, M (SD)	Post test, M (SD)	Δ Change, M (SD)	β (group×time)	p	Hedges' g
CG (n = 103)	44.9 (9.3)	62.4 (8.1)	+17.5 (6.8)			
EG (n = 108)	45.7 (8.9)	78.6 (7.5)	+32.9 (7.1)	14.7 (SE = 2.1)	<.001	1.21

To comprehensively determine the level of creative achievements of students at the final stage of the experiment, their individual works (musical interpretations, artistic works, design projects, choreographic productions, and theatrical sketches) were collected and coded. The quality of these works was determined by independent experts who were blinded to whether the students belonged to the experimental or control group. Their assessment indicated that the EG students who studied using the master class method had higher scores on all four criteria than the CG students. In particular, about the originality indicator, the average scores in the EG were M = 8.1, SD = 1.1; however, in the CG, M = 6.3, SD = 1.2. The difference was statistically significant ($t = 11.5$, $p < .001$, Hedges' $g = 1.56$). Regarding the technical perfection indicator, in the EG - M = 8.3, SD = 1.0. However, in CG – M = 6.9, SD = 1.3 ($t = 9.2$, $p < .001$, $g = 1.20$). At the same time, innovativeness in EG – M = 7.9, SD = 1.2. At the same time, in CG – M = 6.1, SD = 1.3 ($t = 10.7$, $p < .001$, $g = 1.45$). Integrity of the idea in EG – M = 8.4, SD = 1.0, in CG – M = 7.0, SD = 1.1 ($t = 10.1$, $p < .001$, $g = 1.32$). The total integral indicator of the quality of creative works (the average value of the four criteria) was M = 8.2, SD = 0.9 in EG versus M = 6.6, SD = 1.0 in CG. Accordingly, the effect was high (Hedges' $g = 1.48$).

Table 3. Comparative results of expert evaluation of students' creative works

Criterion	CG (n = 103), M (SD)	EG (n = 108), M (SD)	t / β	p	Hedges' g
Originality	6.3 (1.2)	8.1 (1.1)	11.5	<.001	1.56
Technical excellence	6.9 (1.3)	8.3 (1.0)	9.2	<.001	1.20
Innovation	6.1 (1.3)	7.9 (1.2)	10.7	<.001	1.45
Integrity of the idea	7.0 (1.1)	8.4 (1.0)	10.1	<.001	1.32
Integral indicator	6.6 (1.0)	8.2 (0.9)	12.4	<.001	1.48

Note: Δ is the average increase in scores from pretest to posttest; β is the interaction parameter in the mixed model; Hedges' g is the standardized effect size.

Figure 1 shows the mean scores (M ± SD) for five evaluation criteria: originality, technical excellence, innovation, integrity of concept, and integral index. In all categories, students in the experimental group demonstrated higher results compared to the control group ($p < .001$). The largest differences were recorded for the criteria of originality ($g = 1.56$) and integral index ($g = 1.48$).

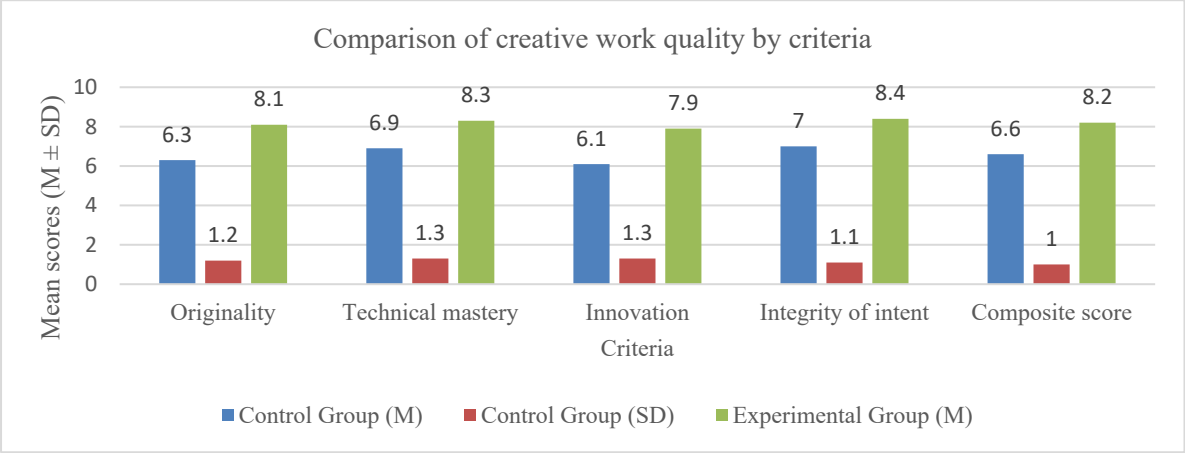

Figure 1. Differences in the indicators of students' creative works depending on the application of the master class

The measurement of learning motivation and reflective skills was carried out at the pretest and posttest stages using standardized questionnaires. There were no statistically significant differences between the groups in the learning motivation index at the beginning of the experiment (EG: M = 3.41, SD = 0.46; CG: M = 3.39, SD = 0.44; $t = 0.29$, $p = .771$). However, after the intervention, the level of motivation in the experimental group (EG) increased to M = 4.12 (SD = 0.39), while in the control group (CG) it only increased to M = 3.57 (SD = 0.42). The linear mixed model (LMM) revealed a statistically significant interaction effect of "group × time" ($\beta = 0.48$, SE = 0.07, $p < .001$, 95% CI [0.34; 0.63]). The standardized effect size is Hedges' $g = 0.96$.

At the initial pretest, the level of reflexivity was similar in the two groups (EG: M = 3.28, SD = 0.51; CG: M = 3.31, SD = 0.49; $t = –0.41$, $p = .682$). After the implementation of the methodology, EG students demonstrated an increase in this indicator (M = 4.05, SD = 0.44), while in CG the increase was smaller (M = 3.52, SD = 0.47). The group × time interaction effect was also significant ($\beta = 0.46$, SE = 0.08, $p < .001$, 95% CI [0.30; 0.62]). The effect size was Hedges' $g = 0.90$ (See Table 4).

Table 4. Dynamics of learning motivation and reflective skills

Indicator	**G**roup	Pretest, M (SD)	Post test, M (SD)	Δ, M (SD)	β (group×time)	p	Hedges' g
Learning motivation	CG (n=103)	3.39 (0.44)	3.57 (0.42)	+0.18 (0.29)			
	EG (n=108)	3.41 (0.46)	4.12 (0.39)	+0.71 (0.33)	0.48 (0.07)	<.001	0.96
Reflective skills	CG (n=103)	3.31 (0.49)	3.52 (0.47)	+0.21 (0.30)			
Indicator	EG (n=108)	3.28 (0.51)	4.05 (0.44)	+0.77 (0.35)	0.46 (0.08)	<.001	0.90

To determine the main moderating effects, mixed linear models (LMM) with group × factor interactions were used. The analysis was carried out for the following variables: gender, specialty, previous artistic experience, course of study. This showed that the group × gender interaction was not statistically significant for either cognitive outcomes (β = 0.9, SE = 1.4, p = .52) or creative works (β = 0.6, SE = 0.8, p = .47). Thus, the method was equally effective for male and female students. Analysis of the group × specialty interaction in mixed models revealed that the influence of the master class method varies in intensity depending on the training profile. Students of musical art showed a significant increase in cognitive and creative indicators. The experimental group outperformed the control group by an average of +15.8 points in knowledge tests (β = 3.2, SE = 1.1, p = .007) and by +1.5 points in the average expert assessment of creative works (p < .01). Thus, music majors respond well to the format of master classes, where practical demonstration is important. In the fine arts, the positive effect was also noticeable. The difference between EG and CG was about +9.4 points in knowledge tests (β = 1.8, SE = 1.0, p = .072) and +0.9 points in creative works (p = .056). Although there is a trend, statistical significance was on the verge. This can be explained by the fact that fine arts activities are more focused on individual work, and the effect of collective master classes is weaker. In design students, the effect of the method was most pronounced. The gain in knowledge in EG exceeded that in CG by +17.3 points (β = 3.9, SE = 1.2, p = .002), and the average scores of creative works by +1.7 points (p < .001). Besides, choreographic profile students also had a high gain, especially in creative results (average gain of +1.4 points in rubrics, p < .01). In knowledge tests, the difference was less pronounced (+8.7 points, p = .081). This indicates that master classes contribute primarily to artistic and practical improvement, rather than to cognitive aspects in choreography. In students studying theater specialties, the gain was average: +10.2 points in knowledge (p = .041) and +1.0 points in creative works (p = .032). This indicated the effectiveness of the method in developing the integrity of the idea and the innovativeness of the productions, but the scale of the effect was smaller than in other areas (See Table 5).

Table 5. Inter-specialty differences in the effectiveness of the master class method

Specialty	Δ Knowledge (EG–CG), β (SE)	p	Δ Creativity (EG–CG), M	p	Description
Musical Arts (n = 55)	3.2 (1.1)	.007	+1.5	<.01	Strongest effect on performance profiles
Visual Arts (n = 47)	1.8 (1.0)	.072	+0.9	.056	Moderate effect, trending upward
Design (n = 42)	3.9 (1.2)	.002	+1.7	<.001	Strongest effect across majors
Choreography (n = 38)	1.6 (0.9)	.081	+1.4	<.01	Strongest growth in creative performance
Theatrical Arts (n = 29)	2.1 (1.0)	.041	+1.0	.032	Moderate effect, especially in integrity of intent

The interaction indicator "group × experience" determined that the method was especially effective for students without prior systematic artistic experience (β = 4.1, SE = 1.3, p = .002). Positive dynamics were also recorded for students with experience, but it was less pronounced. This indicates that the master class form can act as a powerful compensatory tool for those who are just starting professional training. Analysis by courses (1–4) showed that the greatest effect of the method was observed for students of 2–3 years (β = 3.4, SE = 1.0, p = .001). The effect was less pronounced for first-year students. This can be explained by adaptation difficulties (See Figure 2).

The radar diagram shows the relative effect sizes (Δ/β) of the implementation of the master class methodology in 5 specialties (music, fine arts, design, choreography, theater) and 2 additional factors (presence/absence of previous artistic experience and course of study). The largest effects are observed among students without previous artistic experience (β = 4.1), and the specialty "Design" (β = 3.9). Slightly lower data are observed among students of 2–3 years (β = 3.4) and the specialty "Music" (β = 3.2). Moderate results were obtained for theater (β = 2.1). Thus, master classes are important and effective for all groups, but their effectiveness is most pronounced where the combination of practical activity and creative interpretation is central.

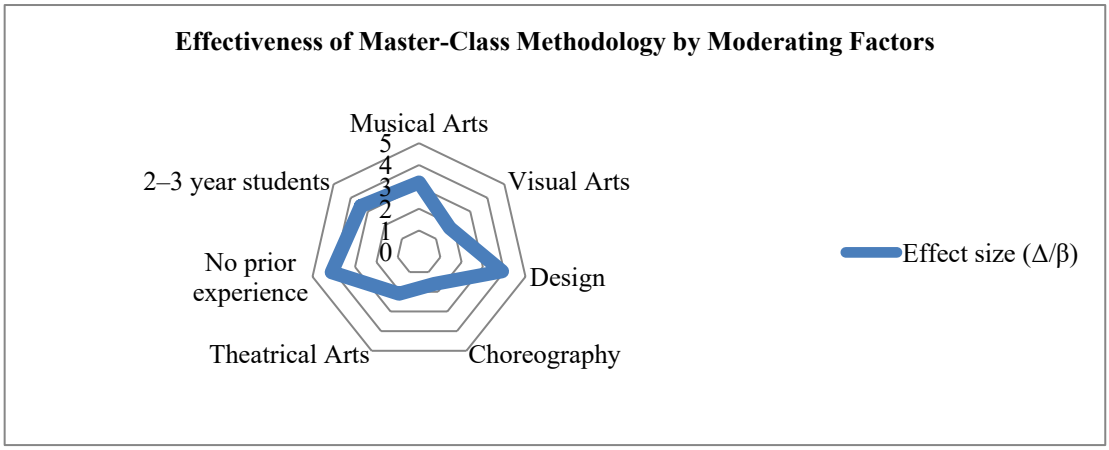

Figure 2. The effectiveness of the master class methodology depends on the moderator factors

4. Discussion

The results confirmed that the master class method increases the level of knowledge acquisition and the formation of practical skills of students of artistic specialties compared to traditional training. This is consistent with the conclusions of Cherevko et al. (2021) and Shkola et al. (2022), who identified the master class as the leading pedagogical technology in improving the individual performance qualities of singers, as well as with the study by Kovalenko (2024) on the effectiveness of guitar master classes in the professional training of musicians. The significant effect size (Hedges' g = 1.21) indicated the statistical significance and high practical relevance of the method. Kovalenko (2024) and Shalatska et al. (2020) indicated that to hold this creative meeting, it is worth inviting scientific and pedagogical workers, leading teachers, practitioners, artists, and composers to educational institutions, which was done in this experiment. An important point is also that to develop the educational process in higher education institutions of art, teachers should look for forms that have a two-way focus on both the student and the teacher (Lã & Fiuza, 2022; Khaldi et al., 2023; Urgilés, 2019). This is fully consistent with the logic of conducting master classes. Major parallels can also be drawn with other educational models of active learning. Thus, the meta-analysis of Al-Samarraie, Shamsuddin & Alzahrani (2019) shows that the “flipped classroom” model allows for a wider involvement of students, which ultimately affects the long-term acquisition of knowledge. This echoes the effects of master classes, where students act as active participants in the process, rather than passive listeners. The second block of results indicated that the use of the master class methodology has a positive effect on the quality of students' creative works (originality, technical excellence, innovation, and integrity of the idea). This is consistent with the findings of Coutts (2019), whose study showed that transformational pedagogy in piano teaching enhances students' ability to express themselves and interpret. Similarly, Holmgren (2022) emphasized the importance of expanding interpretive freedom in music education. Such findings directly correlate with the results obtained regarding the increase in the creativity indicator. Such activities develop creativity, the desire to improvise, and develop one's own desire to experiment (Lauss & Helm, 2024; Kennedy et al., 2025; Śliwa et al., 2021). In the visual arts, the effectiveness of practice-oriented approaches is indicated in the results of Kastner et al. (2021), who indicated that specially designed drawing programs in museums can improve the socio-emotional skills of adolescents. This provides important evidence to suggest that the process of integrating master classes into different artistic disciplines can enhance cognitive and creative development. The third research question concerned changes in the level of motivation for learning and the development of reflective skills. The results showed an improvement in these indicators in the experimental group of students. This is confirmed by the work of Hamilton & Margot (2023) and Seitenova et al. (2023), which indicates that practice-oriented learning is identified as an important means of increasing student engagement and awareness. From the perspective of arts pedagogy, Becker (2023) and Finkelstein (2024) emphasized that the process of integrating movement, theater, and dance allows for the development of educational equity, emotional involvement, and the formation of reflective skills. Similar conclusions were made in the study of Escala et al. (2024), who showed that the process of integrating artistic practices into learning allows for the development of critical thinking and students' ability to self-analysis. Accordingly, practically oriented classes, as well as master classes, are determined by practical competence in the formulation of thematic issues and in scientific implementation, which in turn affects the level of motivation of students.

The data showed that the key factors are the student's specialty, course of study, and previous artistic experience. The most pronounced effects were observed among students who had no previous artistic training, as well as in the specialty "Design". This confirms the assumption that the master class as a format is especially productive when it compensates for the lack of previous experience or requires integrative creative solutions. Chung (2021) and Ren (2015) indicated

that in the educational programs of leading performing arts institutions, the effectiveness of educational initiatives depends largely on the readiness of the target audience and opportunities. This is consistent with our findings, as they showed that students from different majors demonstrate different dynamics, as they have different levels of initial training. Another important factor was the level of the course. Students in the middle years (2–3 years) showed significantly higher gains than first-year students or graduates. This is consistent with the ideas of Joseph (2020) and Hladoshchuk et al. (2023), who identified the future of arts education in the context of the pandemic and indicated that the effectiveness of flexible formats (for example, blended, virtual, or master class) depends on the ability of students to adapt to new pedagogical approaches. Students in the initial stages of their studies often do not yet have a sufficient level of independence, while graduates have already developed their own strategies. Besides, Pavlou & Castro-Varela (2024) identified the importance of e-learning in contemporary art education. These results also echo the study by Jiménez et al. (2018), which compared virtual reality learning with traditional classroom learning. The authors concluded that the effectiveness of an educational intervention depends on the individual characteristics of the participants and the opportunities for its implementation. This is directly reflected in our study. Therefore, previous experience and specialization determine the extent to which students are open to new practice-oriented methods.

It is worth paying attention to the technological aspect. As Ding & Huang (2022) and González-Zamar et al. (2020) have shown, multimedia and digital technologies in art education can enhance engagement and learning effectiveness. These ideas are also confirmed in other works that have drawn attention to the importance of involving virtual reality and other technologies for the development of contemporary art (Jiménez et al., 2018; Joseph, 2020; Kim, 2023). This allows us to conclude that in the future, the master class methodology may be even more effective if integrated with digital tools, especially in groups with a low level of prior training, for whom visual-auditory reinforcement becomes critically important. Thus, the results of the study confirmed the main hypothesis of the study and indicated that the effectiveness of master classes is variable and determined by a combination of external and individual factors. Despite the importance of these results, it is worth pointing out the limitations. It should be noted that the study was conducted within the framework of Ukrainian higher education. This, in turn, may limit the external validity and the possibility of generalizing the results to the educational systems of other countries. An important limitation is the duration of the experiment. The five-month period allowed us to identify short- and medium-term effects, but the long-term impact of the master class methodology remained outside the scope of the analysis. However, in the theoretical space, the conducted study makes several important contributions, as it allows us to expand our understanding of the mechanisms of action of the master class methodology, in particular, its ability to combine elements of modeling, direct feedback, and collective reflection.

5. Conclusions

The conducted study determined the importance of involving the master class methodology in teaching art disciplines in higher education institutions. The results confirmed the main hypotheses and showed their advantages in the cognitive, creative, and motivational dimensions of learning.

The master class methodology provides a higher increase in results compared to traditional learning. The use of a two-variant pre–post test showed a significant effect (Hedges' $g = 1.21$), which in turn indicated the high value of the intervention.

Students in the EG demonstrated higher indicators of originality, technical perfection, innovation, and integrity of ideas, which indicated the importance of the role of master classes as a tool for developing creative potential.

In addition, students who participated in the master classes increased their learning motivation, formed a more stable attitude towards independent work, and activated their reflective abilities. It was also found that the effectiveness of the method varies depending on the specialty, course of study, and previous artistic experience.

From a theoretical point of view, the study expanded the scientific understanding of the mechanisms of action of the master class method and emphasized the importance of integrating practice-oriented and student-centered approaches into modern art pedagogy. In a practical sense, the results can be used to modernize educational programs, improve the professional training of teachers, and introduce new forms of education in higher education institutions.

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Authors contributions

Oksana Kudria was primarily responsible for the conceptualization of the study and the development of the research design. Nataliia Kravtsova and Lidiia Ostapchuk conducted the data collection and contributed to the development of the analytical framework. Oksana Kudria, who also served as the corresponding author, drafted the initial version of the

manuscript and managed all communication with the journal. Ruslan Kashyrtsev aand Iryna Krasylnykova critically revised the manuscript and provided linguistic and editorial input. All authors contributed to the interpretation of findings, approved the final version of the manuscript, and agreed to be accountable for all aspects of the work. Oksana Kudria and Nazaliia Kravtsova contributed equally as lead authors.

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