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The Effect of a Strategy Based on the Theory of Serious Creativity on the Achievement and Development of Performance Skills Among Students of the Institute of Fine Arts

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Abstract: The Skill Based Education: In the face of rapid technological advancement in artistic disciplines like typographic design, skill, based education, is having the problem of adopting the right teaching strategies. Context: The results of the specific background indicate that the traditional teaching methods on typography falls short in creating structured creativity or boosting students' practical performance. We found problems with obtaining typography skills by exploring role of experiences in exploratory surveys and identified limitations in existing pedagogy. Research gaps: There is a shortage of research on the application of the Theory of Serious Creativity in the enhancement of the performance skill in typography education. An attempt is made in this study to develop a teaching strategy according to Theory of Serious Creativity and the results are assessed on cognitive achievement and develop skill performance of the students of Institute of Fine Arts. Results: The experimental study, both with control and experimental groups, confirmed that the strategy had an great impact on typographic design skills and cognitive achievements of students. The combination of structured creative exercises, interactive teaching style and continuous feedback increased engagement and skill acquisition. Uniqueness: Unlike conventional pedagogical studies, this study provides the systematic step of theoretical learning supported by hands on application based on the principles of Serious Creativity. Conclusions: This suggests that the adoption of this strategy to typographic education would facilitate creativity and more effective learning of skills. The application of the study is recommended to be applied to test skill based learning further by training instructors in using the system and by expanding research to other artistic disciplines.

Keywords: Teaching Strategy, Serious Creativity, Skills, Performance, Technique, Typography.

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1. Introduction

In light of rapid technological advancements, skill-based education faces challenges that necessitate updating teaching methods, particularly in the fields of typographic design and typography. These developments highlight the urgent need to adopt modern teaching strategies that enhance structured creativity and practical application. Through exploratory surveys conducted by the researcher with instructors and fifth-year students, difficulties in teaching typography and the inadequacy of traditional strategies in achieving the desired level of performance skills were identified. Consequently, this study seeks innovative solutions by developing a teaching strategy based on the Theory of Serious Creativity, which aims to foster structured creativity and hands-on application.

This research aims to develop a teaching strategy based on the Theory of Serious Creativity and measure its impact on the achievement and development of performance skills using typography techniques among students at the Institute of Fine Arts. The study

employed a descriptive approach to construct the teaching strategy, alongside an experimental approach utilizing a quasi-experimental design with two equivalent groups: an experimental group and a control group. The study was conducted on students at the Institute of Fine Arts in Kadhimiya, with classes selected randomly. The fourth-grade (A) class was designated as the experimental group, while the fourth-grade (B) class served as the control group. The experiment was implemented during the first semester of the 2024-2025 academic year.

The study ensured equivalence between the two groups in terms of age, cognitive level, intelligence test scores, and parental academic achievement to ensure a fair comparison of results. Various research tools were utilized and reviewed by experts and evaluators to establish face validity and construct validity. The tools included a post-knowledge test consisting of 41 multiple-choice questions, with reliability measured using the Kuder-Richardson (KR-20) formula. Additionally, a performance skills test was developed in the form of an observation checklist comprising 14 skills, assessed using a five-point rating scale (Excellent, Very Good, Good, Average, Poor), with reliability verified through Cronbach's Alpha, while validity was measured using the correlation coefficient.

The research findings revealed that the educational strategy based on the Theory of Serious Creativity was effective in enhancing performance and cognitive achievement among students in the experimental group. This was achieved by adopting innovative and interactive teaching methods that integrate theory with practice, incorporating diverse activities and continuous feedback, thereby improving students' ability to engage with typographic design and typography more efficiently, skillfully, and creatively.

Based on these findings, the researcher recommends adopting this strategy or other modern educational strategies rooted in the Theory of Serious Creativity, emphasizing the integration of interactive activities in teaching, ensuring a balance between theory and practice, and providing continuous feedback to support effective learning. The researcher also underscores the importance of training instructors in these strategies to maximize their impact on developing students' performance skills.

In light of this study, the researcher suggests conducting future studies on the impact of the Serious Creativity Strategy in enhancing skills among students specializing in art education, particularly in design techniques courses. Additionally, it is recommended to expand the scope of research to include other artistic subjects, such as drawing and sculpture, thereby enabling the application of modern strategies across various disciplines in fine arts education.

Research Problem

With the rapid technological advancements, skill-based education needs to update its teaching methods to keep pace with contemporary demands, especially in artistic fields such as graphic design. Typography, the art of designing letters and printing, is a fundamental element in this field, playing a crucial role in conveying ideas and facilitating creative visual communication.

Despite the significance of typography, students at the Institute of Fine Arts face challenges in acquiring the necessary performance skills to master this discipline. An exploratory survey conducted by the researcher among typographic design instructors and fifth-year students revealed a gap in the use of effective teaching strategies, negatively impacting students' skill development in this field. Previous studies have also emphasized the need for modern teaching approaches that enhance performance skills and support students in mastering various design techniques.

Based on these insights, this study investigates the impact of a strategy based on the Theory of Serious Creativity in improving performance skills using typography techniques, aiming to provide innovative educational solutions that enhance students' capabilities and better prepare them for the demands of the design industry.

Thus, the research problem is framed in the following question:

"What is the impact of developing a strategy based on the Theory of Serious Creativity in improving performance skills using typography techniques among students at the Institute of Fine Arts?"

Importance of the Research

The importance of the current research is manifested in two main aspects:

- 1) Theoretical Importance:
 - a. The research contributes to presenting a new teaching strategy based on the Theory of Serious Creativity in the field of typographic design and typography. This is a field that has not been sufficiently studied in the Arab world, making it a valuable scientific addition to educational and artistic libraries.
 - b. The research may help clarify the relationship between serious creativity and performance skills, opening the door for future studies in this direction.
- 2) Practical Importance:
 - a. The research provides an innovative educational model that can be applied in teaching various arts subjects such as typographic design, drawing, and sculpture, thereby enhancing the effectiveness of skill-based education.
 - b. It offers modern interactive methods that improve students' performance skills, especially in practical subjects requiring advanced artistic applications.
 - c. The research contributes to the development of typographic design curricula to be more closely aligned with practical applications, enhancing the outcomes of skill-based education.
 - d. It supports researchers and specialists in developing new teaching strategies that can be applied in other artistic fields.

Research Scope

This research is limited to fourth-year students from the Design Department at the Institute of Fine Arts for Boys, Baghdad-Karkh Third, Iraq, specifically focusing on the typography technique for the academic year 2024-2025.

Research Objectives

The current research aims to:

- a. Develop a strategy based on the Theory of Serious Creativity.
- b. Measure the effect of the developed strategy based on the Theory of Serious Creativity.
- c. Assess the magnitude of the effect of the developed strategy based on the Theory of Serious Creativity.

To verify the research objectives, the researcher formulated the following null hypotheses:

- a. There are no statistically significant differences at the (0.05) significance level between the mean ranks of the experimental group students in the pre-and post-performance skills test.
- b. There are no statistically significant differences at the (0.05) significance level between the mean ranks of the control group students in the pre-and post-performance skills test.
- c. There are no statistically significant differences at the (0.05) significance level between the mean ranks of the experimental group students and the control group students in the post-knowledge test of typographic design.

Literature Review

Sada defines strategy as: "An educational concept that requires the formulation of a comprehensive teaching plan, combining the disciplines of educational administration and curriculum and teaching methods. From the perspective of educational administration, this concept focuses on the decision-making process during the educational process, whether inside or outside the classroom, under the supervision of the school. From the perspective of curriculum and teaching methods, the strategy includes procedures related to handling the curriculum content, selecting appropriate teaching methods for the type of students and the nature of the content, in addition to the various educational activities provided by the teacher to ensure successful classroom interaction. Diverse assessment tools are also used to ensure the achievement of the desired goals." [1].

The researcher operationally defines the teaching strategy as an educational strategy aimed at developing performance skills and cognitive achievement. It is implemented in an interactive learning environment through specific steps, including: analyzing

educational objectives, designing a coherent instructional content that supports creativity, selecting diverse interactive activities based on practical application and active learning, employing interactive teaching methods such as brainstorming and project-based learning, preparing assessment tools to measure achievement and skills, and executing educational activities while providing continuous feedback to enhance students' performance and achieve the desired objectives.

Afana defines Serious Creativity as: "A comprehensive mental process aimed at generating new ways of viewing scientific problems in an unconventional manner. It helps expand thinking processes and breaks down the idea of problems that cannot be solved." [3].

The researcher operationally defines serious creativity as a mental process based on steps derived from the theory of serious creativity. It is applied during the teaching process to develop students' performance skills and cognitive achievement in the field of typographic design. These steps include:

1. Conceptualization and problem identification.
2. Collecting and analyzing information.
3. Establishing design requirements and specifications.
4. Generating ideas and developing the design.

Ahmed Al-Luqani and Ali Al-Jamal define Skill as: "The precise and easy performance based on understanding what the person learns physically and mentally." [4].

In the context of the current research, the researcher operationally defines skills as the ability to design and execute comprehensive typographic projects using modern typographic design software. This includes focusing on selecting appropriate fonts, determining text sizes and spacing, and coordinating them with other typographic elements to achieve visual balance, ultimately leading to innovative and effective artistic designs.

Touma defines Performance as: "A human act resulting from awareness and realization to accomplish a task." [5].

In the context of the research, the researcher operationally defines performance as the ability to execute tasks related to typographic techniques with accuracy, speed, and efficiency. Performance is assessed through an observation form that includes specific criteria for evaluating students' execution of design projects and their achievement of defined standards, with a focus on work precision, completion speed, creativity, and the ability to apply advanced typographic techniques.

Encyclopaedia Britannica defines Technique as: "A set of scientific and engineering methods used to solve problems and achieve objectives." [6].

The researcher operationally defines technology as the skilled performance in using advanced tools and techniques to achieve specific objectives, such as enhancing educational or artistic performance. This definition emphasizes the application of modern technology and specialized software to achieve precise and effective results.

Mitchell defines Typography as: "The design of texts in ways that make them more readable and appealing, whether in traditional printing or on digital screens, with a focus on historical and technical developments in typeface design." [7].

The researcher operationally defines typography as the process of using advanced design techniques to arrange text and typographic elements to develop performance skills in typographic design among fourth-year students at the Institute of Fine Arts. This process involves applying educational strategies based on serious creativity, enhancing their academic achievement and practical performance in executing typographic design projects.

Steps for Building the Educational Strategy

The process of building the educational strategy involves a series of defined steps as follows:

1. Formulating a suitable name for the strategy.
2. Identifying the conditions, location, and requirements necessary for building the strategy.

3. Determining the theory upon which the strategy will be based.
4. Analyzing the content and its sections to select the most appropriate strategy.
5. Identifying available alternatives within the strategy to implement it in the form of teaching procedures and events.
6. Precisely determining the objectives, considering the required behaviors and standards.
7. Selecting the appropriate procedures for implementing the strategy.
8. Defining the roles of both the teacher and the student in executing the strategy.
9. Developing alternatives for the procedures as a precautionary measure to ensure the continuation of teaching and learning within the classroom.
10. Evaluating the learning and teaching process based on the standards related to achieving the goals connected with the procedures [8].

Serious Creativity

Serious Creativity, as introduced by De Bono in his book, is synonymous with lateral thinking. De Bono describes it as a form of lateral thinking that helps individuals produce new ways of thinking or decision-making tools. Learning this style reflects on the performance of daily tasks, which are characterized by speed, accuracy, and high quality [9].

Basic Principles of the Theory of Serious Creativity

The Theory of Serious Creativity is a methodology developed by the Russian scientist Genrich Altshuller in the mid-20th century to enhance creativity and innovation. The theory is based on the idea that innovation is not random but can be systematically achieved using a set of defined tools and principles.

Lateral thinking can be used either when needed or spontaneously. Initially, this approach may consume a lot of time, but with practice, it significantly enhances our skills. As mastery develops, lateral thinking becomes more effective when required, and when it turns into a mental habit, it remains productive even in situations that demand conventional solutions [10].

There are four fundamental principles of lateral thinking, each interconnected with the others:

1. Recognizing Dominant Ideas – These are the ideas that dominate thinking and guide other thoughts.
2. Seeking Alternative Perceptions – Aims to find new options beyond the singular perspective defined by dominant ideas.
3. Breaking Free from Strict Logical Constraints – To avoid the influence of traditional logic that hinders innovation, as logic alone does not generate new ideas.
4. Introducing Randomness – Using randomness and surprise to refresh ideas, as chance events often contradict logical justification [11].

Typographic Elements in Design

Letters are the primary means of communication among other typographic elements that contribute to typographic composition [12]. They are considered the most important typographic elements in the design space, as they form the foundation upon which the visual content is built and structured for design output. Printed text consists of a collection of adjacent letters that form words and sentences, conveying the subject matter [13].

The essential components of typographic text can be identified as follows:

- a. Texts:
 - b. Text remains the most crucial element in typographic composition, as it can be used to create structured designs that carry semantic meanings. The artistic perception embedded within text enhances readability (legibility). The principles of text composition involve distribution mechanisms that emphasize a particular letter or word to attract attention. Additionally, graphical elements support text structure, making the design visually accessible [14].
- c. Letters:
 - d. The letter is a fundamental component of text composition, directly influencing legibility. Varying the type and size of letters within the text helps create visual appeal and draw attention to specific sections [15].

- e. Headings:
- f. Headings play a vital role in emphasizing the core idea of the design, attracting the reader's interest in selecting the topic. The dominance of a specific part of the typographic text highlights its importance and creates a focal point [16].
- g. Icons and Illustrations:
- h. Icons and illustrations support typographic text in delivering the intended design message. They add aesthetic value to the overall design, help separate sentences or words, and play a crucial role in reinforcing meaning while maintaining visual harmony with the design's background [17].

2. Materials and Methods

Stages of Constructing the Teaching Strategy

A comprehensive review of academic literature reveals that strategy construction typically follows four key stages: Analysis, Planning, Implementation, and Evaluation – all interconnected to ensure a cohesive instructional process. The researcher adopted these stages, starting with the Analysis Stage, which involves:

1. Educational Context Analysis – This includes identifying key instructional needs, available resources, and learner characteristics (e.g., abilities, motivations, and inclinations) to define general and specific objectives .
2. Content Identification & Organization – Educational content was selected, structured, and enriched with typography-related topics to align with the Typography Design curriculum for fourth-year students at the Institute of Fine Arts. A panel of experts reviewed the material.
3. Content Analysis – The curriculum integrates structured and experiential knowledge, systematically selected to align with educational goals and philosophical foundations.
4. Target Group Selection – Fourth-year design students were chosen due to their advanced knowledge and ability to engage with complex typographic concepts.
5. Learner Characteristics Analysis – Teaching effectiveness depends on understanding students' prior knowledge, motivations, and cognitive development. This stage marks a critical phase in learners' identity formation.
6. Learning Environment Analysis – The classroom setting significantly influences learning. Both physical (e.g., seating, ventilation) and psychological (e.g., fostering mutual respect) factors were considered to create an optimal environment for the study.

The Analysis Stage is fundamental in shaping an effective instructional strategy by examining content structure, learner traits, and the classroom environment. This foundation supports the subsequent Planning, Implementation, and Evaluation phases.

Phase Two: Planning

The educational objectives of the strategy were derived based on general goals and the Typographic Design curriculum, aiming to enhance the performance skills of Design Department students at the Institute of Fine Arts. The objectives include:

- a. Enabling students to define typographic design, identify designer characteristics, apply creative organization skills, and design logos and posters using modern techniques.
- b. Developing their understanding of size contrast, linear perspective, and visual balance, while analyzing the impact of optical illusions on typography.
- c. Equipping them with the ability to explain the importance of typography, explore the history of Arabic calligraphy, and design innovative book and notebook covers following design principles.
- d. Applying typographic principles and Arabic calligraphy history to create logos and advertisements using digital tools.

Defining Behavioral Objectives

Formulating behavioral objectives is essential for achieving targeted learning outcomes. The researcher developed 78 measurable objectives based on Bloom's and Simpson's Taxonomies, categorized as follows:

- a. Bloom's Cognitive Domain (38 objectives): Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation.
- b. Simpson's Psychomotor Domain (40 objectives).
- c. A panel of typographic design and education experts reviewed and validated the objectives, recommending minor modifications.

Phase Three: Implementation

This phase includes a set of procedures that were followed to implement the study. The researcher examined several key aspects, which were discussed in detail in Chapter Two (Theoretical Framework), including:

- a. Literature and previous studies that addressed Serious Creativity Theory.
- b. Specialized sources and references in the field of typographic design.
- c. The characteristics of lateral thinking and its role in enhancing creativity.
- d. The stages and principles of Serious Creativity Theory and its educational applications.
- e. Strategies based on Serious Creativity Theory and their role in the educational process.

A. Formulating Strategy Steps Based on Serious Creativity Theory

Based on the aforementioned points, the steps of the strategy were presented to a panel of experts and evaluators in the fields of teaching methods and art education to ensure their validity.

The theoretical framework of this research presents an analysis of how to construct a strategy and the five lateral thinking techniques that will be used in designing its steps. The design strategy and lateral thinking techniques will be analyzed in terms of objectives, methods, and significance.

The aim of this analysis is to identify which lateral thinking technique aligns with each stage of the design strategy, ensuring that each phase is correctly integrated with the appropriate lateral thinking method to achieve Serious Creativity in the design strategy. Analyzing the Design Strategy and Lateral Thinking Techniques

The first four stages of the design strategy and the five lateral thinking techniques will be analyzed based on the following criteria:

- Objective
- Methodology
- Significance

3. Results

Analysis of the First Four Stages of the Design Strategy

1) Conceptualization and Problem Definition:

The design process begins by defining the subject and identifying the motivation behind it. This stage involves analyzing the problem, exploring multiple alternatives, and selecting the most suitable one. Key steps include defining design goals, assigning tasks, creating a work plan, and presenting solution alternatives [18].

2) Information Gathering and Analysis:

Designers collect and categorize relevant information to define final design requirements. This includes studying the target audience and analyzing competing designs. Proper classification ensures easy access to data, aiding in design decision-making.

3) Defining Design Requirements and Specifications:

Based on prior research, this stage involves identifying essential design specifications. It challenges existing designs, studies market needs, and refines requirements to create innovative solutions or improve existing ones.

4) Design (Idea Generation):

Designers generate multiple ideas and refine them using drawing tools and design software. The goal is to develop creative solutions that meet design requirements, whether by improving existing designs, solving a problem, or creating something entirely new [19].

Analysis of the Five Lateral Thinking Techniques from the Serious Creativity Theory

1) Creative Challenge:

This technique questions existing methods, assuming there are always alternative ways to approach a design problem. By asking “Why?” at different stages, designers discover new solutions beyond traditional approaches [20].

2) .Concepts:

The designer starts with a core idea and expands it into multiple alternative concepts. This process generates various solutions by continuously shifting focal points, allowing for innovative design development.

3) Provocation and Movement:

This method pushes designers beyond conventional thinking. By introducing provocative ideas, designers are encouraged to explore new, creative directions systematically, leading to unexpected but effective solutions [21].

4) .Random Entry:

Designers use unrelated inputs, such as random images or exposure to different fields, to stimulate new ways of thinking. This technique helps break creative blocks and discover fresh design perspectives [22].

Analysis Result

From the previous analysis, it is evident that there is a clear alignment between lateral thinking techniques and the stages of design. This alignment is systematically presented in the following tables 1:

Table 1. shows the alignment between the conceptualization and problem identification phase and the concept approach.

Lateral Thinking Method	Design Phase	Analysis Summary
Conceptualization Method	Ideation and Problem Identification Phase	
- Analyzing the design or existing problem - Presenting several alternatives for solutions - Selecting the most suitable one for the project and proceeding with it	- Analyzing the design situation - Presenting several alternatives for solutions - Selecting the most suitable one for the project and proceeding with it	
The result: The concept approach will be integrated with the stage of conceptualization and problem identification, as both aim to analyze the current situation, present alternatives, and select the most suitable one.		

The table 2 illustrates the alignment between the information gathering and analysis phase with the random entry technique in the design process. It highlights the role of lateral thinking in introducing diverse information and images, facilitating ideation, problem identification, and the development of design requirements. This integration fosters creativity and innovation in design.

Table 2. shows the alignment between the Information Gathering and Analysis phase and the Random Entry technique

Lateral Thinking Method	Design Phase	Analysis Summary
Conceptualization Method	Ideation and Problem Identification Phase	
Introducing information and images to open new pathways of	Introducing information and images that help in defining	

thinking that help in developing design requirements and design ideas.	design requirements and design ideas.	
The result: The random entry technique will be integrated with the information gathering phase, as both aim to introduce diverse information and images into the design process.		

The table 3 demonstrates the relationship between setting design requirements and specifications with the challenge approach. It highlights the role of lateral thinking in questioning existing design methods, fostering innovation. By challenging competing designs and identifying new specifications, this approach enhances problem-solving and creativity in the ideation and problem identification phases.

Table 3. illustrates the alignment between the stage of setting design requirements and specifications and the challenge approach.

Lateral Thinking Method	Design Phase	Analysis Summary
Conceptualization Method	Ideation and Problem Identification Phase	
•Challenging the current way of doing and designing things.	•Challenging competing designs, design problems, and consumers, and finding new specifications to design a new idea, develop the design, or solve a problem.	
The result: The challenging approach will be integrated with the stage of setting design requirements and specifications, as both aim to challenge the existing situation.		

This table 4 presents a structured approach to the design process by integrating lateral thinking and conceptualization methods at different phases. It highlights the key stages, including analysis, ideation, and conceptualization, while emphasizing techniques such as provocation and movement to generate new and creative design ideas. The framework facilitates the development of innovative solutions by aligning design requirements with problem-solving strategies, ultimately enhancing the overall design process [23].

Table 4. Innovative Design Thinking Framework

Lateral Thinking Method	Design Phase	Analysis Summary
Conceptualization Method	Ideation and Problem Identification Phase	
Generating new, creative ideas.	•Generating new design ideas that fulfill design requirements, whether through a new design, design development, or problem-solving in the design.	
The result: The techniques of provocation and movement will be integrated with the design phase because both aim to generate new, creative design ideas. The stage of defining design requirements and specifications.		

The steps of the proposed strategy after synthesizing the principles of the Serious Creativity Theory with the Design Strategy:

Stage 1: Conceptualization and Problem Definition for Typography Design

- a. Precisely defining the problem or project scope, whether it's a new typography design style or improving an existing typography design style [24].

- b. Understanding the motivation behind the typography design. Using techniques such as concept mapping, a broad range of typography design solutions can be explored, paving the way for innovative typography design methods.

Stage 2: Information Gathering and Analysis for Typography Design

- a. Delving into the history and background of the project, which lays the foundation for making informed decisions.
- b. Conducting market research and gathering extensive information to derive insights from competing typography design patterns [25].
- c. Conducting market research and gathering extensive information to derive insights from similar typography design styles as a method for random input.
- d. Conducting a survey among students and gathering feedback on the proposed typography designs.
- e. Creating an inspiration board filled with diverse references related to typography design as well as various images of typographic designs, sparking creativity and guiding design exploration [26].

Stage 3: Defining Typography Design Requirements and Specifications

- a. Identifying the specifications and requirements of typography design based on prior research.
- b. Challenging the predetermined typography design specifications.
- c. Conducting a comprehensive comparative analysis with existing typography design styles to ensure the new design stands out in the market.

Stage 4: Developing and Refining Typographic Design Ideas

- a. Generating creative typography design ideas using the provocation and movement techniques.
- b. Selecting one of the ideas generated through provocation and starting to develop typography design concepts [27].
- c. Choosing a single typography design from the generated ideas and refining it using various design software.
- d. Preparing and finalizing the typography design, along with an explanation of the design concept.

Educational Tools Selection

Educational tools play a crucial role in enhancing the learning process by engaging both teachers and students while improving the quality of education. Based on the principles of the Serious Creativity Theory, the researcher selected tools that support the development of students' performance skills at the Institute of Fine Arts. These tools included digital boards and design software for hands-on typography activities, whiteboards and markers for illustrating concepts, examples of successful and unsuccessful typography designs to encourage critical thinking, presentation devices for interactive content delivery, internet resources for research, and high-quality printing materials for final design production [28].

In addition, educational activities were designed to foster creativity and technical skills by integrating instructional, social, and practical elements. Classroom activities included visual presentations to analyze typographic design components, mind mapping exercises to organize design concepts, and hands-on projects using software like Canva and Picsart. Students engaged in brainstorming sessions to explore innovative design ideas and applied their knowledge of color and typography in practical exercises, enhancing their ability to create cohesive and visually appealing designs.

Extracurricular activities were incorporated to reinforce classroom learning, including homework assignments where students refined their designs and justified their modifications, online research to analyze successful and weak design examples, and digital participation through uploading final projects for peer feedback. To further enhance performance skills, the researcher developed a Typography Design Activity Book, which underwent expert review and was revised based on their feedback [29].

Additionally, structured lesson plans were developed according to the Serious Creativity Theory, ensuring alignment with the study's objectives. These plans covered typographic design topics and aimed to enhance students' performance skills. The lesson plans were reviewed by experts in curriculum design and teaching methods, who provided feedback on educational activities and instructional tools. Necessary adjustments were made to optimize their effectiveness in achieving the study's goal of improving students' typographic design skills.

The Evaluation Phase

The evaluation phase is a critical aspect of developing an instructional strategy, providing both quantitative and qualitative insights into its effectiveness. It is a continuous process that allows for refinement and improvement during implementation. The researcher employed three types of evaluation based on the Serious Creativity Theory. Pre-evaluation was conducted before implementation, aimed at validating the strategy through expert reviews [30]. The objectives of this phase included assessing the strategy's suitability for students and the learning environment, ensuring alignment with educational goals, reviewing instructional and behavioral objectives, and evaluating research tools such as the synchronous thinking test, observation form, and achievement test. This phase ensured the relevance of activities and materials, allowing for necessary improvements before full implementation. The formative (ongoing) evaluation was conducted throughout the instructional process [31]. This involved using classroom questions to stimulate analytical thinking, short quizzes and practical exercises to assess typographic design concepts, weekly and monthly tests to track skill development, and classroom observations to assess real-time performance. The summative (final) evaluation was carried out post-experiment to measure the overall impact of the strategy, focusing on assessing final learning outcomes, measuring students' synchronous thinking and performance skills, and comparing the experimental group (strategy users) with the control group. The post-test on typographic design achievement served as the primary measure, supported by an observation form to conduct comprehensive quantitative and qualitative evaluations. This process confirmed the strategy's effectiveness in enhancing students' performance skills, in line with the Serious Creativity Theory.

Second: The Experimental Approach of the Strategy (Based on Serious Creativity Theory)

The experimental approach is defined as the method used by researchers to control and manipulate various conditions and variables related to a specific phenomenon [32]. Since the second objective of this research is to examine the effect of the instructional strategy based on Serious Creativity Theory in developing performance skills of students at the Institute of Fine Arts in Typographic Design, the most suitable methodology for achieving this goal is the experimental approach.

This approach focuses on manipulating the independent variable (the strategy based on Serious Creativity Theory) and observing its impact on the dependent variable (the development of performance skills), while controlling extraneous factors that may affect the results, such as environmental factors [33].

First: Selection of the Experimental Design

Choosing an appropriate research design requires a high level of skill, as it determines the procedural steps of the experiment [34].

Thus, the researcher adopted the quasi-experimental design with two equivalent groups (experimental and control) and a post-test. This design was selected as the most appropriate for studying the effect of the instructional strategy based on Serious Creativity Theory:

- a. The experimental group was taught using the proposed Serious Creativity-based strategy.
- b. The control group was taught the same content using traditional methods..

Second: Research Population and Sample

A. Research Population

The research population includes all individuals or elements to whom the study results will be generalized, whether they are people or objects related to the research topic [35]. In this study, the population consists of all fourth-year students in the Design Department at Institutes of Fine Arts for Boys in Iraq for the 2024-2025 academic year. This includes students across various Iraqi provinces studying Typographic Design as part of their practical curriculum.

B. Research Sample

The research sample is a subset selected from the research population to ensure accurate representation [36].

The sample consists of fourth-year students from the Institute of Fine Arts in Kadhimiya, where the experimental procedures were conducted. The study included two sections, each with 15 students:

- a. Experimental Group: Taught using the strategy based on Serious Creativity Theory.
- b. Control Group: Taught using traditional methods.

C. Equivalence of the Research Groups

To ensure internal validity and evaluate the impact of the instructional strategy, the researcher conducted statistical equivalence between the two groups based on several key variables that could influence the results [37]. Although the students in the sample share similar socio-economic, cultural, and educational backgrounds and are of the same gender, the researcher examined specific variables to establish equivalence. One of the variables considered was the prior knowledge test, which was administered before the actual instruction. The purpose of the test was to assess students' initial understanding of fundamental typographic design concepts and determine their readiness to absorb the study material. The test included 10 multiple-choice questions, and students had to select the correct answer from four options. Each correct answer was awarded 1 point, while incorrect answers received 0 points, with a total possible score of 10 points.

The table 5 presents the results of the Mann-Whitney U test assessing the equivalence of research groups' prior knowledge scores. The test yielded a U-value of 106.0, a Z-score of 0.272, and a non-significant result at the 0.05 level, indicating no significant difference between the experimental and control groups' prior knowledge levels.

Table 5. Results of the Mann-Whitney Test for the Equivalence of Research Groups' Scores in the Prior Knowledge Test

ue Significance Level (0.05)	Critical Value	Z-Score	Mann-Whitney U	Mean Rank	Sum of Ranks	N	Group	Seq.
Not Significant	1.96	0.272	106.0	15.07	226	15	Experimental	1
				15.93	239	15	Control	2

Raven's Standard Progressive Matrices Intelligence Test Scores:

The table 6 presents the results of the Mann-Whitney U test for assessing the equivalence of research groups' intelligence test scores. The test yielded a U-value of 107.0, a Z-score of 0.228, and a non-significant result at the 0.05 level, indicating no significant difference between the experimental and control groups.

Table 6. Results of the Mann-Whitney Test for the Equivalence of Research Groups' Scores in the Intelligence Test

ue Significance Level (0.05)	Critical Value	Z-Score	Mann-Whitney U	Mean Rank	Sum of Ranks	N	Group	Seq.
Not Significant	1.96	0.228	107.0	15.87	238	15	Experimental	1
				15.13	227	15	Control	2

3 - Age of the students measured in months

The table 7 presents the Mann-Whitney U test results for the equivalence of mean ranks between two groups. The test yielded a U-value of 110.0, a Z-score of 0.104, and a non-significant result at the 0.05 level, indicating no statistically significant difference between the experimental and control groups' mean ranks.

Table 7. Results of the Mann-Whitney test for the equivalence of mean ranks between the two groups.

ue Significance Level (0.05)	Critical Value	Z-Score	Mann-Whitney U	Mean Rank	Sum of Ranks	N	Group	Seq.
Not Significant	1.96	0.104	110.0	15.33	230	15	Experimental	1
				15.67	235	15	Control	2

4- Educational attainment of the parents

A - Educational attainment of the fathers:

Table 8. Frequencies of the educational attainment of the fathers of the students in the research groups, degrees of freedom, calculated and tabulated (χ^2) values, and the significance level.

Significance Level (0.05)	Degrees of Freedom			College and Above	Secondary and Preparatory	Reads and Writes / Primary	N	Group
		Tabulated χ^2	Calculated χ^2					
Not Significant	2	5.99	0.602	5	6	4	15	Experimental
				4	5	6	15	Control

Chi-Square Test for Fathers' Educational Attainment

The table 8 calculated χ^2 value = 0.602, while the tabulated χ^2 value = 5.99 at a degree of freedom of 2 and a significance level of 0.05. Since the calculated χ^2 value is lower than the tabulated value, the differences in the frequencies of fathers' educational attainment between the two groups are not statistically significant. This indicates that the two groups are equivalent in terms of fathers' educational attainment.

b - Mothers' Educational Attainment

The table 9 presents the chi-squared test results for mothers' educational attainment across research groups. With a calculated χ^2 value of 1.329, compared to the tabulated value of 5.99 at a 0.05 significance level, the result is not significant, indicating no statistically significant difference in educational attainment between the experimental and control groups.

Table (9)
Frequencies of Mothers' Educational Attainment for the Research Groups and the
Calculated and Tabulated χ^2 Values.

Significance Level (0.05)	Degrees of Freedom	Chi-Squared Values		College & Above	Secondary & Intermediate	Reads & Writes & Primar	Number	Group
		Tabulated	Calculated					
Not Significant	2	5.99	1.329	4	6	5	15	Experimental
				7	4	4	15	Control

Fourth: Controlling Extraneous Variables

Extraneous variables are factors that can influence the relationship between independent and dependent variables but cannot be directly measured. These variables, which are often conceptual, can affect the dependent variable and interact with the independent variable, causing changes [38].

To control extraneous variables, the researcher employed several strategies:

- Sample Selection:** The sample was carefully chosen to represent the target population, ensuring equivalence between the experimental and control groups in variables like age, parental education, intelligence, and socio-cultural background.
- Concurrent Events:** External factors like natural disasters or political unrest were controlled to ensure they didn't affect the results. The experiment was conducted between September 30 and November 19, 2024, with no major disruptions.
- Experimental Mortality:** There were no significant dropouts or transfers, with absences occurring at similar rates in both groups, minimizing impact on the results.
- Maturation Effect:** Biological or psychological changes over time had minimal impact since the experiment was brief (one academic term), and any maturation would have affected both groups equally [39].

Fifth: Experimental Procedures

The researcher took several measures to minimize the impact of external factors on the progress of the experiment, including:

- Measurement Tools:** Standardized measurement tools were used to assess students in both the experimental and control groups.
- Study Confidentiality:** The researcher collaborated with the institute's administration and instructors to ensure the study's confidentiality. Students were informed that the researcher was a lecturer in Typographic Design and that the study's nature and objectives would remain undisclosed to avoid influencing their behavior [40].
- Study Material:** The study material was selected from the Typographic Design syllabus, enriched with additional concepts related to typographic techniques, text arrangement, and visual element coordination. The content was organized progressively, starting from simple to complex concepts.
- Class Schedule:** Each group was assigned one instructional day per week with four class sessions, providing three hours of instruction per group [41].
- Instructor:** The researcher personally taught both the experimental and control groups to ensure the experimental procedures were implemented consistently.
- Experiment Duration:** The experiment lasted for one academic semester, the first semester of the 2024-2025 academic year.

Sixth: Research Requirements

- Instructional Plans:** The researcher prepared lesson plans for both the experimental and control groups. The experimental group used a strategy based

on Serious Creativity Theory, while the control group was taught using traditional methods, ensuring an objective comparison [42].

2. Research Instruments: These tools are used to collect data about variables, such as students' characteristics and behaviors. The research instruments for this study included:
 - a. Post-Cognitive Test: This 41-question test, covering multiple-choice and true/false formats, assessed students' cognitive achievements in typography design after the experiment. Each correct answer received one point, with a total possible score of [43].
3. Development of the Cognitive Test:
 - a. Defining Objectives: The study's behavioral objectives were based on the typography curriculum and aligned with Bloom's Taxonomy (Knowledge, Comprehension, Application, etc.). These objectives were reviewed by experts in art education, teaching methods, design, and evaluation.
 - b. Test Items: The cognitive test consisted of 41 objective questions (multiple-choice and true/false) covering the study's objectives. Items were designed to avoid ambiguity and to measure students' understanding and application.
 - c. Scoring: The test followed a 1-point scoring system for correct answers, with a maximum score of 41 points.
4. Validity of the Cognitive Test: To ensure accuracy in assessing students' cognitive achievements, the test's validity was verified using expert feedback and content alignment with the research objectives.
 - 1) Face Validity: Face validity refers to the extent to which test items are related to the intended purpose for which they were designed, based on expert evaluations. In this study, the cognitive test was presented to a group of experts in Art Education, Typography Design, and Teaching Methods. Some test items were reworded for clarity based on their feedback without changing their number, and the final version was approved.
 - 2) Content Validity: Content validity refers to the extent to which the test adequately covers the scientific or skill-based content being measured. In this study, the Typography Design curriculum was analyzed and enriched with additional concepts to ensure the test comprehensively covered all aspects of the subject matter.
 - 3) Test Instructions: The cognitive test included detailed instructions to help students answer the questions effectively, aiming to reduce anxiety and motivate them to perform their best [44].
 - 4) Pilot Administration of the Cognitive Test: To ensure the appropriateness of the test items, the researcher conducted a pilot study with 24 students from the Design Department. The objectives of the pilot study were to determine the appropriate time for completing the test, identify unclear questions and rephrase them, calculate the difficulty index and discrimination power of test items, and assess the effectiveness of incorrect answer choices.

Test Time Calculation:

To determine the average time for students to complete the test, the formula was applied, resulting in an average response time of 45 minutes.

Pilot Study Results:

The results showed that all test items were clear and understandable. No major modifications were required, confirming the test's validity and reliability.

Statistical Analysis of the Cognitive Test Items:

The analysis of test items aimed to measure item difficulty, discrimination indices, and evaluate the effectiveness of incorrect answers. The test was designed to differentiate between students' performance levels.

1. The researcher scored the responses of a 30-student sample, assigning 1 point for correct answers and 0 for incorrect answers, and ranked the scores into two groups: upper (top 27%) and lower (bottom 27%).
 2. Difficulty Index: The difficulty index for each item ranged from 0.33 to 0.71, indicating varying levels of difficulty.
 3. Discrimination Index: The discrimination index ranged from 0.32 to 0.61, with values between 0.30 and 0.70 considered good, confirming that the test items effectively differentiated between high- and low-performing students.
- 2) Evaluation of Test Quality
- According to Bloom (1971, p. 66):
- a. A test is considered good if its difficulty index ranges between 0.50 and 0.60.
 - b. A test is acceptable if the difficulty index is between 0.20 and 0.80.
 - c. Since the difficulty and discrimination indices of all test items fell within the acceptable range, this confirms that:
 - d. The test contains an appropriate variety of difficulty levels.
 - e. It has sufficient discrimination power to distinguish between students' performance levels.
 - f. The overall reliability of the test is reinforced.

Effectiveness of Incorrect Answer Choices:

The researcher used a formula to evaluate the effectiveness of incorrect answer choices. If a choice attracted more students from the lower group, it was deemed effective. The analysis showed that the incorrect choices were effective, as they attracted a sufficient number of students from the lower group. Therefore, no changes were needed.

Reliability of the Cognitive Test:

Test reliability measures consistency and stability of results. In this study, the reliability was assessed using the Kuder-Richardson Formula 20 (KR-20), resulting in a reliability coefficient of 0.91, indicating high reliability and internal consistency of the cognitive test.

Performance Skills:

An observation form was designed to assess students' typographic design skills, using a five-level rating scale. The key skills assessed included font selection, text organization, spacing adjustments, clarity, creativity, and precision in execution. The form was applied before and after the experiment to evaluate skill development.

The tool was developed with input from experts and tested in a pilot study. Modifications were made based on feedback, and the final version was validated and used in the research [45].

Skill Assessment Map:

The researcher developed a Skill Assessment Map to accurately measure essential typographic design skills such as font selection, text organization, and spacing adjustments, linking them to educational activities and assessment tools.

- 1) Formulation of Behavioral Objectives:
The behavioral objectives were based on the typographic design curriculum, enriched with additional concepts. The objectives, totaling 78, were classified using Simpson's taxonomy and reviewed by experts for accuracy.
- 2) Defining the Observation Form Items:
The observation form included 14 specific performance skills assessed on a five-level scale, focusing on aspects like font selection and creativity in design.
- 3) Formulating the Observation Form Items:
The form identified 14 core typographic design skills, with clear indicators for each, measured on a five-point scale to accurately reflect students' performance.
- 4) Validity of the Observation Form:

Face Validity: The observation form's face validity was verified by a panel of experts, who reviewed its clarity and relevance. Based on their feedback, minor revisions were made to improve wording while maintaining the number of items.

Content Validity: The researcher ensured the test items represented the behavioral objectives by analyzing the typographic design syllabus and using a skill assessment map.

5) Test Instructions:

Instructions were provided to guide students in completing the performance tests, including submitting designs with explanations, adhering to project requirements, and applying typographic skills such as font selection, text clarity, creativity, and organization.

6) Pilot Study for the Performance Skills Test:

A pilot study was conducted with 24 students from the Institute of Fine Arts. The test duration was 90 minutes, and the results confirmed that the test items were clear and understandable [46].

7) Reliability of the Observation Form:

The observation form's internal consistency was measured with Cronbach's Alpha, yielding a high value of 0.98. Inter-rater reliability was also high, with a correlation of 0.99 between the researcher and 0.98 with another observer, indicating strong consistency in assessments.

8) Construct Validity of the Observation Form:

Correlation coefficients between individual items and total scores were calculated. Items with a correlation greater than 0.38 were considered statistically significant and valid indicators of the targeted skills.

The table 10 presents correlation coefficients (rrr) representing the relationship between individual items and the total score. The values range from 0.27 to 0.89, indicating varying degrees of association. Higher correlation values suggest stronger relationships, highlighting the reliability and consistency of specific items in contributing to the overall score measurement.

Table 10. displays the relationship between each item and the total score.

Correlation Coefficient (r)	Seq.	Correlation Coefficient (r)	Seq.	Correlation Coefficient (r)	Seq.	Correlation Coefficient (r)	Seq.
0.64	31	0.67	21	0.72	11	0.63	1
0.86	32	0.67	22	0.75	12	0.48	2
0.82	33	0.69	23	0.7	13	0.67	3
0.57	34	0.85	24	0.75	14	0.57	4
0.86	35	0.76	25	0.48	15	0.62	5
0.77	36	0.69	26	0.89	16	0.59	6
0.45	37	0.7	27	0.79	17	0.67	7
0.51	38	0.64	28	0.75	18	0.8	8
0.61	39	0.76	29	0.62	19	0.75	9
0.52	40	0.79	30	0.8	20	0.82	10

At a 0.05 significance level, the critical value is 0.38. It is observed that almost all items have correlation coefficients higher than 0.38, indicating that most of the items are strongly related to the total score of the observation form.

2. Item-Skill Relationship:

This section presents the correlation coefficients between the test items and the specific skills being measured. The skills were categorized into 14 groups (Skill 1 to Skill 14), and the correlation coefficients between each item and each skill were calculated.

The correlation values ranged between 0.54 and 0.91, suggesting strong relationships between the test items and the different skills being assessed. However, there were some variations in the strength of the correlations across different skills.

This finding indicates that the test items were carefully designed to measure specific aspects of the targeted skills effectively [47].

The table 11 presents correlation coefficients (rrr) indicating the relationship between individual items and their corresponding skills. The values range from 0.54 to 1.00, suggesting varying degrees of association. Higher correlation values imply stronger relationships, reflecting the reliability of specific items in measuring their respective skills with accuracy and consistency.

Table 11. presents the relationship between each item and the corresponding skill.

Correlation Coefficient (r)	Seq.	Correlation Coefficient (r)	Seq.	Correlation Coefficient (r)	Seq.	Correlation Coefficient (r)	Seq.
Skill 10		Skill 7		Skill 4		Skill 1	
0.76	1	0.83	1	0.83	1	0.82	1
0.90	2	0.91	2	0.80	2	0.54	2
0.80	3	0.79	3	0.90	3	0.80	3
Skill 11		Skill 8		Skill 5		Skill 2	
0.82	1	0.80	1	0.70	1	0.66	1
0.89	2	0.83	2	0.75	2	0.82	2
0.86	3	0.89	3	0.67	3	0.80	3
Skill 12		Skill 9		Skill 6		Skill 3	
0.71	1	0.85	1	0.91	1	0.83	1
0.83	2	0.75	2	0.83	2	0.80	2
0.88	3	0.73	3	0.81	3	0.90	3
				Skill 14		Skill 13	
				1	1	0.73	1
						0.66	2
						0.77	3

3. Skill-Total Score Relationship:

The correlation coefficients between each skill and the total score of the observation form were calculated. The objective of this analysis was to evaluate the extent to which each skill contributes to the overall performance assessment.

Statistical Significance:

If the correlation coefficients exceed the critical value at a 0.05 significance level, this indicates that the skill is statistically significantly related to the total score.

The table 12 presents correlation coefficients (rrr) representing the relationship between each skill and the total score. The values range from 0.52 to 0.95, indicating varying degrees of association. Higher correlation values suggest strong relationships, demonstrating the significance of individual skills in contributing to overall performance and total score reliability.

Table 12. presents the relationship between each skill and the total score.

Correlation Coefficient (r)	Seq.	Correlation Coefficient (r)	Seq.
0.88	8	0.82	1
0.92	9	0.78	2
0.89	10	0.87	3
0.91	11	0.87	4
0.91	12	0.9	5

0.73	13	0.95	6
0.52	14	0.83	7

4. Consistency of Observation with the Researcher and Another Observer:

The reliability coefficient of the observation form using Cronbach's Alpha method was calculated to be 0.97. The correlation coefficients were used to measure the consistency between the observations made by the researcher and those made by another observer [48].

a. For the researcher's own observations:

The correlation coefficient was 0.99, indicating high consistency between the researcher's observations over multiple instances.

b. For the researcher's observations and another observer's observations:

The correlation coefficient was 0.98, indicating a strong agreement between the researcher and the other observer.

This suggests that the observation tool can be reliably used by different individuals to provide consistent results, enhancing the tool's reliability and its ability to deliver accurate results regardless of who performs the observation.

The table 13 presents data used to calculate the reliability coefficient of the researcher's observations, including values for XXX, YYY, their squares (X^2 , Y^2), and their product ($X \times Y$). The total sums indicate statistical measures for assessing consistency, supporting the evaluation of observational reliability in the research study.

Table 13. shows the reliability coefficient of the researcher's own observations.

$X * Y$	Y^2	X^2	Y	X	Seq.
27048	25921	28224	161	168	1
31504	32041	30976	179	176	2
24645	25281	24025	159	155	3
19320	19044	19600	138	140	4
11016	11664	10404	108	102	5
7830	7569	8100	87	90	6
19738	20164	19321	142	139	7
15621	16129	15129	127	123	8
8184	8649	7744	93	88	9
5106	5476	4761	74	69	10
170012	171938	168284	1268	1250	المجموع

The table 14 presents statistical data for computing the reliability coefficient of observations between the researcher and another observer. It includes values for XXX, YYY, their squares (X^2 , Y^2), and their product ($X \times Y$). The total sums facilitate assessing inter-observer reliability, ensuring consistency and accuracy in observational data analysis.

Table 14. Reliability Coefficient of Observation with Another Observer

$X * Y$	Y^2	X^2	Y	X	Seq.
26376	24649	28224	157	168	1
29920	28900	30976	170	176	2
25110	26244	24025	162	155	3
20160	20736	19600	144	140	4
9894	9409	10404	97	102	5
8820	9604	8100	98	90	6
20294	21316	19321	146	139	7
14514	13924	15129	118	123	8

7128	6561	7744	81	88	9
5037	5329	4761	73	69	10
167253	166672	168284	1246	1250	المجموع

Seventh: Application

A. Research Tools:

The cognitive test was administered as a pre-test and post-test to measure theoretical knowledge. It consisted of 41 objective questions, taking around 45 minutes. The students' performance skills were assessed through practical projects before and after the experiment, based on an observation form. The evaluation time was 90 minutes. Statistical analysis using SPSS was performed, with the Mann-Whitney and Wilcoxon tests applied to assess differences between groups and changes within the experimental group. This analysis helped determine the effectiveness of the experimental strategy, with results to be presented in Chapter 4.

B. Application of Research Plans:

The educational environment was prepared by providing necessary materials and tools to ensure the experiment's success. The experimental group was taught using the proposed strategy with typographic exercises and motivational methods to enhance simultaneous thinking. The control group followed the traditional method. The experiment followed structured teaching plans aimed at developing simultaneous thinking and refining typographic skills, using diverse teaching strategies such as critical thinking, problem-solving, and practical application, supported by digital tools and visual aids.

Eighth: Statistical Methods:

The SPSS statistical analysis program was used to analyze the statistical data from the tests and results with accuracy and efficiency, contributing to reliable results based on scientific principles [49].

Chapter Four:

First: Presentation of Results

The researcher presents the results obtained in accordance with the logical sequence of the research objectives and null hypotheses:

Objective 1: Building an Educational Strategy Based on the Theory of Serious Creativity

This objective was achieved through the construction of an educational strategy that includes clear stages, as outlined in Chapter Three. These stages (analysis, planning, implementation, and evaluation) were documented by the researcher in Chapter Three.

Objective 2: Measuring the Impact of the Strategy on the Acquisition and Development of Performance Skills among Design Students Using Typographic Techniques

The second objective was verified through the null hypotheses:

Null Hypothesis 1:

There are no statistically significant differences at the 0.05 level between the average ranks of the experimental group in the pre-test and post-test for performance skills [49], as shown in table 15.

Table 15. Results of the Wilcoxon Test for Paired Samples (Experimental Group)

STATISTICAL SIGNIFICANCE	Z VALUE		MEAN OF VALUES	SUM OF VALUES	SAMPLE	SIGN
	Critical	Calculated				
Significant at the (0.05) level	1.96	3.408	0	0	15	Negative
			8	120		Positive

Null Hypothesis 2:

There are no statistically significant differences at the 0.05 level between the average ranks of the control group in the pre-test and post-test for performance skills, as shown in table 16.

Table 16. Results of the Wilcoxon Test for Paired Samples (Control Group)

STATISTICAL SIGNIFICANCE	Z VALUE		MEAN OF VALUES	SUM OF VALUES	SAMPLE	SIGN
	Critical	Calculated				
Not Significant at (0.05) Level	1.96	1.425	11.67	35	15	Negative
			7.08	85		Positive

Null Hypothesis 3:

There are no statistically significant differences at the 0.05 level between the average ranks of the experimental group and the control group in the post-test of the typographic design knowledge test, as shown in table 17.

Table 17. Results of the Mann-Whitney Test to Evaluate the Differences in the Post-Test Knowledge Scores of the Two Research Groups.

Significance Level (0.05)	Critical Value	Z Score	Mann-Whitney U Value	Mean Rank	Sum of Ranks	N (Number)	Group	Seq.
Significant	1.96	2.076	62.5	18.83	282.5	15	Experimental	1
				12.17	182.5	15	Control	2

Objective 3: To determine the extent of the impact of the strategy built according to the theory of serious creativity, table as shown in 18.

Table 18. Impact of Strategy Based on Serious Creativity Theory on Performance Skills.

Interpretation	Effect Size (r)	Number of Students (N)	Z Value	Group	Test
Very Large Effect Size	0.88	15	3.408	Experimental	Performance Skills
Medium Effect Size	0.37	15	1.425	Control	Performance Skills

4. Discussion.

Results of Hypothesis Testing:

1. There are statistically significant differences in the performance skills of the experimental group, reflecting a positive impact of the strategy.
2. There are no statistically significant differences between the pre-test and post-test performances in the control group, indicating the absence of a noticeable improvement in the performance skills of the control group.
3. There are statistically significant differences between the mean scores of the experimental and control groups in the cognitive test, with differences favoring the experimental group, indicating a positive effect of the applied strategy on improving knowledge of the subject matter.

Second: Interpretation of Results:

In light of the results presented, the researcher believes that the superiority of the experimental group students, who studied typography subjects using the educational strategy based on the theory of serious creativity, over the control group students who studied the same subject in the traditional way can be explained as follows:

1. The educational strategy positively contributed to improving the performance skills of the students, as the practical exercises and interactive applications included in the strategy were the main reason for this improvement [50].
2. The applied strategy led to enhancing the students' knowledge of the subject matter in the experimental group compared to the control group. These differences can be attributed to the diversity of teaching methods used in the strategy, which includes interactive activities and connecting theoretical content with practical applications.

The results of the experimental group can be attributed to the following reasons:

- a. The strategy included a variety of interactive activities that stimulated creativity in students, contributing to the development of performance skills.
- b. The strategy focused on practical application using typography design techniques, enabling students to improve their performance skills through repeated practice and continuous guidance.
- c. The strategy integrated theoretical knowledge with practical application, helping students establish a deep understanding of the subject matter and improving their knowledge acquisition.
- d. The use of repeated assessment tools with continuous feedback significantly contributed to enhancing academic performance and motivating students to continuously improve their performance [51].

5. Conclusion

Based on the results of the study, the researcher concluded the following:

1. The results showed a noticeable improvement in the performance skills of the experimental group compared to the control group, reflecting the role of practical exercises and innovative applications in developing students' skill performance.
2. The study revealed statistically significant differences favoring the experimental group in the cognitive test, indicating that the use of the strategy led to improved theoretical understanding and its practical application by the students.
3. The results showed that the educational strategy used with the experimental group was effective in developing performance skills, as it achieved statistically significant differences between the pre- and post-test scores. This can be attributed to moving away from traditional methods and focusing on innovative and interactive teaching techniques.
4. The diverse educational activities integrated into the strategy contributed to enhancing creativity among students, suggesting the importance of diversity in teaching methods to stimulate active learning.
5. The use of repeated assessment tools and continuous feedback significantly contributed to motivating students to improve their academic and skill performance.

Fourth: Recommendations:

Based on the results and conclusions, the researcher recommends the following:

1. Adopt innovative educational strategies, such as those based on the theory of serious creativity, to develop performance skills in teaching academic subjects.
2. Include interactive and diverse educational activities to stimulate creativity and enhance student engagement in the educational process.
3. Prepare training programs for teachers to equip them with the skills to use innovative teaching methods that focus on the student as the center of the educational process.
4. Emphasize the integration of theoretical knowledge with practical application in the curricula to enhance deep understanding and improve performance skills.
5. Provide an encouraging learning environment that combines creativity, interaction, and continuous feedback to support students' academic and skill performance.

Fifth: Suggestions:

In continuation of the current study and with the aim of further development, the researcher suggests conducting future studies in the following areas:

1. The impact of the serious creativity strategy in developing skills among students of the Department of Art Education in design techniques.
2. The impact of using the serious creativity strategy in improving the performance of students in the Department of Applied Arts in sculpture.

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