

From Drawing to Design: Thinking Transformation Training in Graphic Composition Teaching

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Abstract: Graphic composition, as a fundamental design course, plays a crucial role in guiding students to transition from painting to design thinking. This paper elaborates on the necessity of this transformation and introduces six types of thinking transformation training implemented in actual teaching processes: transitioning from concrete to abstract, from imitation to creativity, from sensibility to rationality, from affirmation to negation, from individual to collective, and from divergent thinking to problem-solving. Additionally, it shares specific implementation methods for various thinking training topics and related homework cases. At the same time, the paper shares specific implementation methods of various thinking training topics as well as related case studies. Finally, the effectiveness of thinking transformation training is demonstrated through comprehensive design assignments completed by students, offering new insights into graphic composition and the connection of subsequent professional courses.

Keywords: Graphic Composition; Teaching, Thinking Training; Design; Thinking Transformation

1. Introduction

From painting based on "copying" in high school to design based on "creativity" in college, every student majoring in design will face a transform in the way of thinking. As a bridge between painting and professional design, <Graphic Composition> is duty-bound to assume a responsibility to help students realize the transformation of thinking from painting to design [1].

2. The Necessity of Thinking Transformation

The course of Graphic Composition is usually

offered in the second semester of the freshman year. Before that, students only take art courses such as sketching and color. However, the long-term exam-oriented training in sketching and color at the college entrance examination focuses on observing existing scenery, depicting texture and details, capturing color and light relationships, etc. Such traditional painting is mainly based on copying, and its thinking method is mainly perceptual thinking, figurative thinking, and reappearing thinking [2].

The way of thinking has a significant impact on behavior. In years of teaching practice, we have found that if <Graphic Composition>, as an introductory design course, cannot help students transform their thinking methods, then the phenomena such as "imitating and plagiarizing, turning composition assignments into artistic creations, and being at a loss when it comes to theme expression" cannot be avoided [3]. For example, on online platforms such as the Red Book and Bilibili that are focused on by young people, we have discovered a serious and perplexing problem, where identical composition works are displayed by multiple uploader as their original works. This phenomenon indicates that although the course has entered the design foundation stage, many students' awareness is still at the stage of painting, where copying others' works is considered a natural and even admirable thing. For example, the traditional three compositions have been widely criticized for being disconnected from subsequent professional design courses, and even some art colleges have abandoned them [4].

The concept of Design Thinking was proposed by the Stanford Design Institute in the United States, advocating the use of design thinking methods to solve various practical problems. In recent years, it has gradually gained recognition and promotion from domestic and foreign enterprises. The core content of design thinking is to start from a design task, focus on

the user, and seek innovative problem-solving solutions through multiple channels. Therefore, its main types of thinking involve user thinking, problem-solving thinking, creative thinking, and so on. These types of thinking are essential for modern design, but they are lacking in traditional painting courses. In addition, traditional painting is characterized by imagery and concreteness, while many modern design forms such as architecture, products, and public art are primarily characterized by abstraction. Therefore, abstract thinking is also an important component of design thinking. As the most important design foundation course for art and design majors, we hope to add some thinking transformation training content in graphic composition to help students break free from the thinking inertia of traditional painting and gradually approach design thinking, laying a good foundation for subsequent professional design courses.

3. Specific Methods of Thinking Transformation Training

Based on the above analysis, we have integrated thinking transformation training into some of the homework sessions on the basis of conventional graphic composition assignments, and also designed some original training topics. Focusing on the core thinking types in 'design thinking', such as abstract thinking, user thinking, problem-solving thinking, creative thinking, etc., we have designed the following six aspects of thinking transformation training topics. We will elaborate on the implementation objectives and processes of these topics, while showcasing some students' homework cases [5].

3.1 From Figurative to Abstract

The perception and creation of abstract forms are the teaching focus of graphic composition. However, the effective transformation from figurative to abstract is a difficult point in teaching, which is often overlooked [6]. To address this, we have designed the following three progressive abstract training exercises.

(1) Abstract exercise using photographs

Implementation process: Select a landscape photograph and replace the specific scenery and figures in the photo with simple dots, lines, and planes. Complete the transformation process from concrete to abstract while preserving the original image style. (Figure 1)

Project explanation: Landscape photographs typically contain a large number of specific scenery and figures. This project guides students to discard details and refrain from focusing on what the objects in the image specifically "are," but rather to focus on how the morphological elements in the image can be "simplified." To preserve the image's style, emphasis should also be placed on the proportional relationships, light-dark relationships, visual centers, and other compositional elements between the forms. Through a process of refining the essentials, students' visual generalization abilities are exercised. This project is placed at the beginning of the course to help students establish abstract concepts and awareness from the outset of their learning.



Figure 1. Abstract Exercise of Projection Photos, Works by Students Cai Jiaqi and Wang Jiayi

(2) Form extraction and expansion [7]

Implementation process: Select one form around you that you like the most or feel the most deeply. On the premise of ensuring the recognition of this form, extract it to an extremely simplified state. Expand the extracted forms, such as omission, linearization, and planarization, to obtain creative basic forms. Based on these basic forms, create a theme and complete one artwork. (Figure 2)



Figure 2. Form Refinement and Expansion, Works of Students Liu Ping and Shi Ke

Project explanation: This topic first trains the ability to extract, simplify, and expand a specific form, while also considering the meaning of the form to offer the work a certain content and expression. Compared to the previous exercise, the difficulty has increased.

(3) Implementation process of animal form deconstruction and reorganization exercise:

Implementation process: Select an animal form and analyze its main and secondary features. Retain the main features and some secondary features, simplify them, and obtain 2-3 basic shapes. Create based on basic forms as constituent elements. The work is required to be abstract, aesthetically pleasing, and to show the faint appearances of primitive animals. (Figure 3)

Project explanation: Animals are the most complex and concrete beings in nature, and it is difficult to abstract their forms. However, it is precisely because of this that students can better develop their abstract abilities.

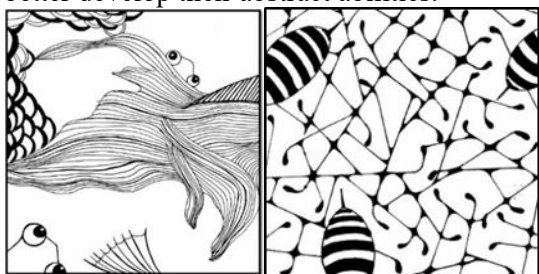


Figure 3. Deconstruction and Reorganization of Animal Forms, by Chen Limin and Dai Yinhong

3.2 From Imitation to Creation

In graphic composition, several common compositional forms are introduced, such as approximation, gradation, radiation, and specificity, among others. It is easy to purely imitate these forms, but mere imitation lacks soul, whereas design necessitates thought and spirit. Therefore, during the imitation process, we must also impart creative thinking methods to students, such as positive association, reverse association, similar association, and so forth, to awaken their innovative consciousness. For instance, in the following three routine exercises, we restrict the selection of forms, prompting students to think and associate, thereby generating creative themes.

Implementation process: Morphological Transformation Exercise: Identify two forms with a "causal relationship," designated as the initial and final forms respectively. Utilize gradation composition to complete the mutual transformation between the forms and express a specific theme (Figure 4). Morphological Specificity Exercise: Select two forms with a "similar relationship," with one serving as the repeated form and the other as the specific

form. Express a certain theme through the form of specific composition (Figure 5). Figure-Ground Reversal Exercise: Determine two forms with an "opposing relationship," assigning one as the figure and the other as the ground. Employ the compositional form of figure-ground reversal to convey a particular theme.



Figure 4. Gradual Composition, Form of Causality, <The Change of Speed>, by Lin Lifang



Figure 5. Specific Composition, Form of Similarities, <Toleration>, by Xu Yang

Project explanation: Prior to imposing restrictions on form selection, students tended to copy blindly for these assignments. Given young people's fondness for anime and manga, cartoon images frequently appeared in their work, lacking depth. However, after restricting the morphological relationships, students must engage in associative thinking between forms, contemplate the implications of their connections, and integrate these creative methods to produce thematic expressions. The incorporation of this creative thinking approach not only injects excitement into the creative process but also taps into students' creative potential.

3.3 From Sensibility to Rationality

While traditional painting also necessitates a certain degree of rationality, the artist's thought patterns, personality, emotions, and more significantly influence the artwork, with sensibility predominantly guiding the process. Design, on the other hand, while embracing

sensibility, is essentially a problem-solving process that demands a heightened level of rationality. The transition from sensibility to rationality permeates through numerous project trainings. Here, two projects are presented for illustration:

(1) Naming and analysis of design works

Implementation process: The teacher presents six design works from various fields such as architecture, product design, and public art. Students, working in groups, perceive the feelings evoked by each design work and intuitively name them using "adjectives." After naming, compare whether the names given by different groups for the same work exhibit similarities. Conduct a rational analysis of the form and color of each work, discussing the origins of the sensations and why the naming might be similar.

(2) My "Sour, Sweet, Bitter, Spicy"

Implementation process: The teacher provides a black-and-white image, and each student colors it based on their feelings to express the four tastes of "sour, sweet, bitter, spicy." Randomly select several students' color schemes and compare them, allowing the entire class to vote for the "most sour," "most spicy," "most bitter," and "most sweet" color combinations. Utilize color theory principles to conduct a rational analysis, discussing why certain color schemes emerged victorious.

Project explanation: Naming design works and coloring images based on feelings engage sensibility. However, analyzing the formation of sensations in design works and color schemes necessitates rational analysis grounded in an understanding of form and color representation. Through these project trainings, students genuinely realize that "feelings" are not elusive but intimately tied to the constituent elements, compositional methods, and color tendencies of visual objects. Furthermore, under normal circumstances, most people share similar sensations, which lays the foundation for rational design.

3.4. From Affirmation to Negation

Case-based teaching is a commonly employed instructional method, with conventional cases often adopting an "affirmative" approach, showcasing masterpieces and outstanding works to students for their approval. However, creative thinking in design necessitates seeking innovation through negation. Consequently,

we consistently promote the mantra of "not blindly adoring, daring to negate" in our teaching to stimulate students' creative abilities.

(1) Homework improvement exercise

Implementation process: The teacher presents a selection of graphic composition homework from previous students, and students choose one as the subject for improvement. Analyze the strengths and weaknesses of the chosen homework and identify potential innovative breakthroughs. Reconceptualize and produce a new graphic composition work (Figure 6).

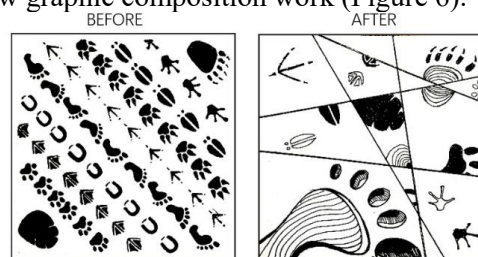


Figure 6. Homework Improvement Exercise, <Footprints>

(2) Poster recoloring exercise

Implementation process: The teacher provides a winning flat poster design, which is then desaturated to a black-and-white draft. All students color the poster based on the theme it intends to convey. Collect and display all classmate's color schemes side by side, selecting the optimal one. Compare the optimal student's color scheme with the poster's original color scheme, discussing and analyzing their merits and drawbacks, and elaborating on the reasons (Figure 7).



Figure 7. Poster Recoloring Exercise, <Global Warming>

Project explanation: Some students, lacking self-confidence, admire others' works while doubting their own design abilities. By optimizing classmates' homework and award-winning graphic works, students are delighted to discover that they can indeed do better! By challenging others' works, this project raises students' awareness of the design and creative value that "negation" can bring.

3.5 From Individual Consciousness to Group Consciousness

In painting, the emphasis lies on the expression of personal emotions, fostering a strong sense of individuality. Conversely, design necessitates a focus on the perceptions of the audience, thereby requiring a weakening of individual consciousness and a strengthening of collective consciousness, which aligns with the user-centric mindset essential in design.

(1) The debate between "Artist" and "Designer"

Implementation process: The teacher initiates discussions on an online forum with topics such as "Does art need to be understood?", "What constitutes good design?", and "What are the similarities and differences between artists and designers?" Students participate in the online discussions, and the teacher summarizes the outcomes during class sessions.

Project explanation: This course adopts a mixed online and offline teaching approach, leveraging the online forum as a platform for students to freely express their opinions. As the number of forum posts increases, students gradually converge on a shared understanding that design serves the masses. As designers, they should not solely prioritize their own feelings but actively seek to comprehend the aesthetics and needs of the broader audience. These discussions and debates have, to a certain extent, facilitated the development of a collective consciousness among students.

(2) "This is Me"

Implementation process: Students create works themed "This is Me," utilizing graphic composition techniques to express their personalities. Student A's work is presented, and Student B attempts to guess A's personality based on the piece. Student A explains the personality traits he/she intended to convey through the work. A discussion ensues, exploring the congruence between A's intended expression and B's perceived interpretation, and why there may be discrepancies.

Project explanation: During previous coursework evaluations, it was common for students to introduce works where their intended message differed significantly from what their peers perceived. This project aims to sensitize students to the fact that what they perceive as "three circles" in their self-awareness may appear as "a face" to others. If

a design fails to resonate with viewers, it loses its significance. Therefore, students must shift their focus from their personal perceptions of things to the universal understanding held by the external world. In the realm of design, individual consciousness must cede ground to collective consciousness.

3.6 From Divergent Thinking to Problem-solving

Both divergent thinking and problem-solving thinking belong to the category of creative thinking. Divergent thinking is characterized by its unconventionality and relentless pursuit of variation, while problem-solving thinking involves conducting various forms of searches centered on a core issue, ultimately leading to its resolution. Divergent thinking emphasizes divergence, whereas problem-solving thinking necessitates both divergence and convergence.

Taking the observation method in the teaching of "Graphic Composition" as an example, teachers typically encourage students to adopt divergent thinking, observing natural forms from as many angles as possible, such as looking up, down, in cross-section, microscopically, and from a distance, to obtain unique forms as sources of creative inspiration. Subsequently, the created graphics are extended into design fields, integrated with business cards, gift bags, cultural T-shirts, etc. However, this process primarily involves divergent thinking without problem-solving thinking, as it does not originate from a problem-centric perspective, whereas design is inherently a problem-solving process.

(1) Sensory expression exercise

Implementation process: Divide into groups and select a sensory noun, such as cold, warm, rugged, elegant, etc. Discuss how to express this sensation through various aspects, including basic elements, fundamental techniques, composition, and light-dark relationships. Create an abstract work that embodies the chosen sensory expression (Figure 8).

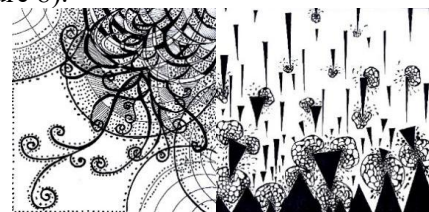


Figure 8. Sensory Expression Exercise <Itch and Pain>, by Zheng Feiyi and Xue Qing

(2) Form-Color isomorphism exercise

Implementation process: Select a work from the previous sensory expression exercise that accurately conveys the intended sensation. Find a color image whose color scheme matches the aforementioned sensation. Use color extraction and reconstruction techniques to color the graphic composition work. Ensure that the color scheme enhances the theme's expression [8] (Figure 9).



Figure 9. FormColor Isomorphism Exercise <Destructive Power>, by Student Cong Yi

Project explanation: The above two exercises, in essence, represent two steps of the same project. It starts with a creative prompt, followed by seeking solutions within the learned knowledge of plane and color composition. This is a process of solving a given problem. Through this project, students develop a tool mindset, recognizing that the knowledge acquired serves as tools for problem-solving. Choosing the right tools enables the expression of appropriate themes, and only when form and color tools work towards the same goal can the theme's expression be strengthened. This project

requires the integrated application of graphic and color composition knowledge to solve problems, posing a certain level of challenge. Nevertheless, it trains students' ability to utilize abstract forms for comprehensive design expression.

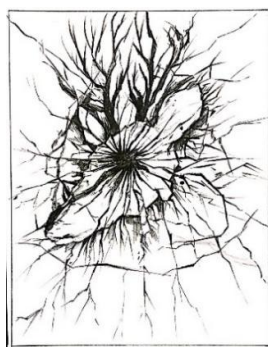
4. Effectiveness of Thinking Transformation Training

The thinking transformation training methods introduced above are relatively basic and single-faceted, aimed at liberating students from the confines of traditional painting-oriented thinking and gradually guiding them towards a design-oriented mindset. However, to verify whether these training exercises have truly been effective, they must be put to the test in authentic design projects [9]. Consequently, for the final assignment of this course, we tasked students with creating public service posters, a project that necessitates the comprehensive application of the aforementioned thinking approaches. Given that freshmen often have limited knowledge of public service issues, we chose the popular and familiar topic of "animal protection" as the design theme [10].

Design assignment: Graphic Design for a "Animal Protection" Themed Poster (Figure 10)
Implementation process: First class: Assign the design task. Throughout the course: Students collect creative materials and conceptualize design schemes. Last class: Submission of design work.



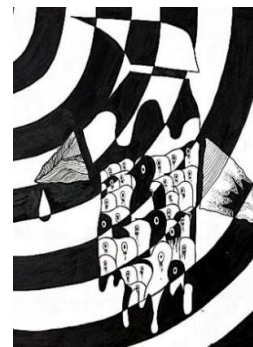
<Break Free>, by Chen Tangyue



<Lost Deer>, by Ge Yuxiang



<SOS>, by Li Jialu



<Looking Back Home>, by Wang Jiayi

Figure 10. Graphic Design of Posters on the Theme of Animal Protection, Student Work

Specific requirements: Use abstract forms as the primary expressive elements, with individual figurative forms allowed when necessary. Clearly convey the theme. Include a creative brief outlining the design rationale and the course knowledge points utilized in the creation process.

Design outcomes: Since the assignment was given at the beginning of the course, students approached their studies with a clear goal and motivation throughout the entire process. After undergoing extensive conventional project training, thinking transformation exercises, and nearly a semester of contemplation on the

design theme, students exhibited a heightened enthusiasm for creation, resulting in a number of thoughtful and innovative graphic design works that demonstrated depth. These accomplishments were not the product of mere imitation or sudden inspiration but rather the cumulative application of the graphic design knowledge they had acquired. While still immature, these works, created by freshmen, are truly encouraging. Furthermore, we believe that such design thinking training provides a robust foundation for subsequent professional design courses.

5. Summary and Reflection

"Graphic Composition" serves as a pivotal foundational course in design disciplines; however, as the scope of design expands and design representation techniques advance, the teaching content and methods of this course have increasingly faced scrutiny. Teachers of professional design courses often inquire, "Have you actually studied graphic composition?" We maintain that the three compositions remain indispensable in design education, but they must actively evolve towards professional design orientations, necessitating corresponding changes in teaching content and methodologies.

The transition training from painting-oriented thinking to design-oriented thinking has equipped students with a preparatory mindset for design. Nevertheless, both routine training and thinking transformation training demand substantial time, posing a significant contradiction with the dwindling number of class hours. To ensure the achievement of teaching objectives, we have adopted a mixed online and offline teaching approach, incorporating theory lectures, topic discussions, peer assessment of assignments, among others, into the online platform. This has created favorable conditions for achieving tangible results in project-based training.

While the thinking transformation training introduced in this paper has effectively enhanced students' design thinking capabilities, we have also observed that the increased learning intensity and difficulty have imposed considerable pressure on a small segment of students with average aptitudes. Addressing how to assist these students in their growth and improvement will be a critical focus and challenge to be tackled in subsequent teaching

processes.

Acknowledgments

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