

Applying Semiotic Theories to Graphic Design Education: An Empirical Study on Poster Design Teaching

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Received: May 21, 2015 Accepted: July 1, 2015 Online Published: November 25, 2015

doi:10.5539/ies.v8n12p117

URL: <http://dx.doi.org/10.5539/ies.v8n12p117>

Abstract

The rationales behind design are dissimilar to those behind art. Establishing an adequate theoretical foundation for conducting design education can facilitate scientising design methods. Thus, from the perspectives of the semiotic theories proposed by Saussure and Peirce, we investigated graphic design curricula by performing teaching experiments, verifying the adequacy of applying these theories to poster design. During the teaching experiment, a matched groups design method was used for assigning 30 students to either an experimental group or a control group. The results of the experiment revealed that compared with the control group students, the experimental group students, who applied the semiotic theories to their poster designs, performed more favourably in image creativity, picture aesthetic, typography, and total poster design score. The posters created by the students were submitted to International Triennial of Ecological Posters 'the 4th Block', and a total of 4 creations from the experimental group were accepted. The results of the teaching experiment verify that applying semiotic theories to graphic design curricula facilitates improving student ability to observe objects and cultivating their capability to design posters and reinforce the visual tension in the posters.

Keywords: semiotic theories, graphic design education, poster design teaching

1. Introduction

Humans tend to perceive the world through signs, and their daily life frequently involves symbolising surroundings (Hoffmeyer & Emmeche, 1991). In the late nineteenth century, Ferdinand de Saussure (1857–1913) applied the concepts of associationistic psychology and sociology to establish linguistic and semiotic theories. From the perspective of behaviourism, Charles S. Peirce (1839–1914) proposed the concept of pragmatism, laying the foundation of semiotics. Subsequently, numerous scholars have contributed to the research of semiotics and applied related concepts to various media and cultures (Michael, 1999). After decades of development, design education often frequently involves applying semiotics to teaching or designing (Ashwin, 1984). Therefore, semiotics is integral to design education and is an aspect motivating the authors of the present study to conduct this research.

The prevalence of sign usages in the late nineteenth century motivated research on ideographic languages (Heim & Kratzer, 1998). This research trend exerted a marked influence on the domain of graphic design, particularly on design methodology (Bennett, 2006). Since the fifteenth century, design has been invariably perceived as a branch of the arts. Because artists are generally gifted with innate talent, the entire process in which they create art can be difficult to comprehend. Consequently, natural talent is considered necessary for learning graphic design (Bennett, 2006). However, the rationales behind creating graphic designs are actually distinct from those behind producing art. Moreover, adequate theoretical foundations can enable scientising design methods. Therefore, according to the theories of semiotics, the second research motivation of this study was employing a teaching experiment approach to verify the feasibility of applying semiotics to graphic design teaching.

Having been continually used for more than two centuries (Gallo & Quintavalle, 2001), posters are, despite being a type of conventional communication medium, essential for propagating information because they are generally exposed to viewers at close range (Eskilson, 2012). Regarding the current design education related to visual communication, poster design training is considered a crucial and professional subject (Findeli, 2001). An

effectively designed poster should not only attract attention but also convey intended messages. However, creating such a poster involves various design concepts and visual image expression. Numerous scholars have focused on investigating poster design from a psychology perspective (Byrne, 1990; Cook, 2012), but few studies have been verified according to case studies involving practical teaching. Therefore, the third research motivation of the present study was to examine poster design education by performing a teaching experiment. Overall, according to the semiotic theories proposed by Saussure and Peirce and the development background of linguistics and signs, we attempted to scientise a design methodology for graphic design education.

2. Literature Review

2.1 Theory of Semiotics

The term semiotics was invented by American philosopher Peirce. Afterward, Swiss linguist Saussure thoroughly investigated the term and proposed the concept of semiology, which has exerted profound influences in subsequent studies (Y. Wu & S. Wu, 2010). In *Course in General Linguistics*, Saussure elaborated the meaning and principle of signs, asserting that a sign comprises two components: the signifier, related to the physical appearance of an object, and the signified, pertaining to the mental concept of the object (Saussure, 2011). Fiske (1991) stated that any object in the universe has a specific appearance and characteristic. When humans encounter such objects, they tend to impose denotative concepts on the objects; the imposed external connotation is determined through cultural convention, and the act of imposition is called signification (Figure 1).

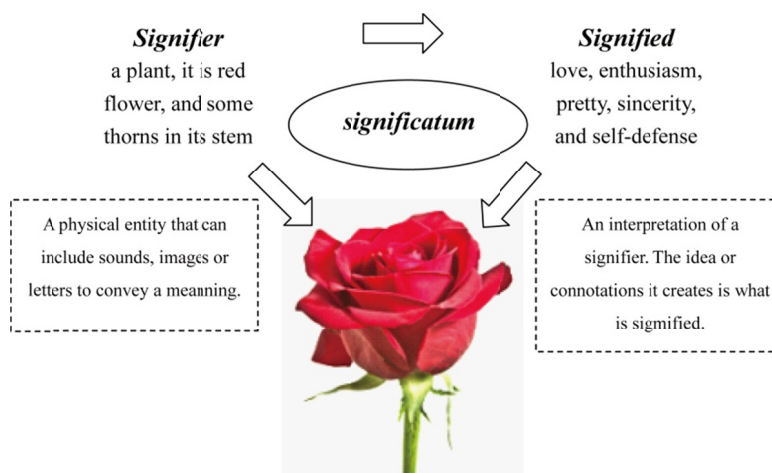


Figure 1. A relation is between signifier and signified

Saussure (2011) proposed that language is a system for verbally expressing thoughts. Creating a system of signs involves unity between the signifier (expressing a concept) and the signified (concept being expressed). Furthermore, in such a system, the signifier and signified might not be naturally or absolutely related; hence, the signified need not feature a specific characteristic. In other words, the relational tie between the signifier and the signified can be in any form, and the signified need not denote a core meaning to be matched with the signifier; this contention reflects the principle of arbitrariness in linguistic signs (Saussure, 2011). According to the aforementioned assertions, in the present study, we explored the example of '+'. In terms of Chinese characters, this sign symbolises the number ten. However, from the perspective of Eastern culture, the sign also signifies the concept of perfection. Furthermore, the sign denotes semantic meanings including sight, a cross, a hospital, Christianity, position, and redemption, which are signified concepts that can also be represented by other signifiers (Figure 2).

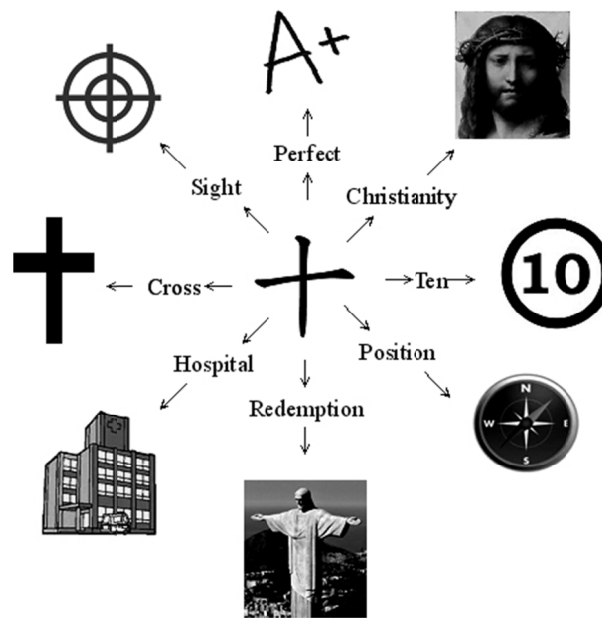


Figure 2. The arbitrariness principle of linguistic signs

Peirce asserted that signs are omnipresent as long as humans exist (Deledall, 2000). Using continuism and realism as core concepts, Peirce divided signs into three elements: (a) a representamen, the form of the sign that represents a thing; (b) an object, the thing to which the sign refers; and (c) an interpretant, the connotations and functions of a sign perceived by a viewer. A close relational tie amongst these elements facilitates elaborating the connotation of a sign (Ponzio & Petrilli, 2009). Additionally, Peirce further categorised signs into three types according to the relationship between the characteristics of a sign and its object: (a) an icon, a sign that physically resembles its object (e.g., a portrait); (b) an index, which does not provide direct information about its object; however, the object can be comprehended through inference or association (e.g., fire → hot); and (c) a symbol, a sign that is defined through cultural conventions or must be learned to understand its object (e.g., ♀ → women) (Eco 1986). Figure 3 shows a summary of the sign theories proposed by Peirce. We applied these theories as the theoretical foundation for conducting related courses.

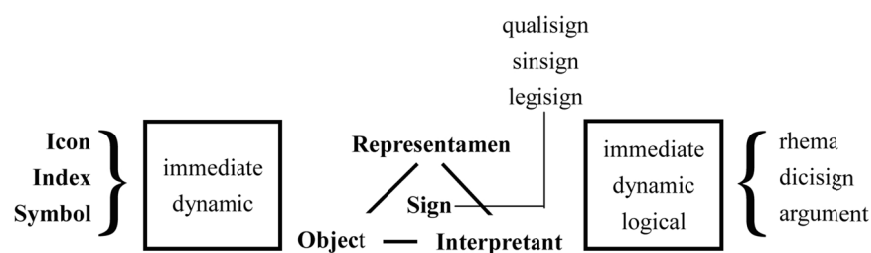


Figure 3. The structure of the sign notion of Charles S. Peirce

2.2 Graphic Design Development and Education

The term graphic design was invented by William A. Dwiggins in 1992. Amongst all types of art, graphic design is the most globalised and an omnipresent application that facilitates explaining, decorating, or identifying an object (Newark, 2002). The process of graphic design involves selecting and arranging images on a graphic medium to convey a concept (Barnar, 2013). Most graphic design creations comprise both images and texts, and an adequate integration between these two aspects is necessary for clearly expressing the meaning of the creation. Barnar (2013) stated that graphic design pertains to a process in which texts and images are converted into signs. However, because each sign represents unique meanings, variously combining signs might generate new meanings. Therefore, an excellent graphic design creation not only enables viewers to easily understand its

intended messages but also displays signs to elicit viewer imagination and artistic conceptions that are based on personal experience.

Graphic design involves logical thinking (Byrne, 1990) and encompasses the prototypes created by artists and designers (Newark, 2002). In the past, graphic designers were called commercial artists (Hollis, 2001). However, their social role has been gradually clarified as society advances (Frascara, 1988). Specifically, graphic design can be perceived in a product cocreated through industrial society and cultural economics (Hollis, 2001). Visual style, an essential aspect of graphic design, has been discussed by numerous scholars and experts. Frascara (1988) asserted that contentions regarding visual style should be revised. For example, the importance of a visual structure within an aesthetic context is frequently overemphasized, and that of an idea in the communication process is often omitted. The difference between visual creation and visual manipulation is unclear, and the influence of graphic communication on public ideas and feedback is commonly disregarded.

After Bauhaus was founded in 1919, design became an integrated science requiring students to possess knowledge in design history and cognitive psychology and to master various drawing techniques (Margolin, 2002). Furthermore, vocational schools, art schools, or higher education institutions have listed graphic design as an essential course (Swanson, 1994). Swanson (1994) stated that the mature development of commercial society has enabled the public to gradually accept the graphic design profession. Moreover, most people agree that graphic designers can use their unique creativity and aesthetic ideas to generate profit for clients' products or services. However, Bennett (2006) contended that the fundamental rules of graphic design remain vague. Therefore, whether the practice of graphic design should be based on artistic intuition or logical thinking remains controversial. Schenk (1991) proposed three phases of graphic design: preparation, main creative, and production phases (Figure 4). These phases can be a reference for formulating graphic design curricula.

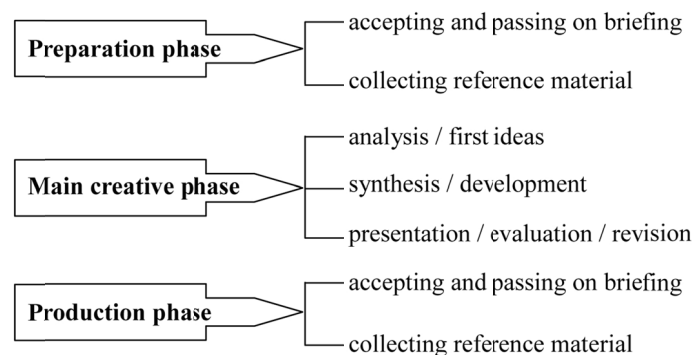


Figure 4. The three processes for training of graphic design (Schenk, 1991)

3. Research Design

3.1 Experimental Procedure

The teaching experiment was conducted during the poster design chapter of a graphic design course. Public welfare was selected as the poster design theme during a 4-week course schedule. In the beginning of the course, 54 students individually designed a public welfare poster. The poster grades were used as pretest scores and inputted into a statistical program that arranged the scores into a sequence. The median of the scores was used as the datum point, from both sides of which 30 students were selected as the final experimental participants. A matched groups design method was then applied to assign the participants into either Group A or Group B, with each group comprising 15 students. Group A (experimental group) and Group B (control group) received graphic design course schedules involving and not involving semiotic theory courses, respectively. The experimental procedure is detailed as follows (Figure 5):

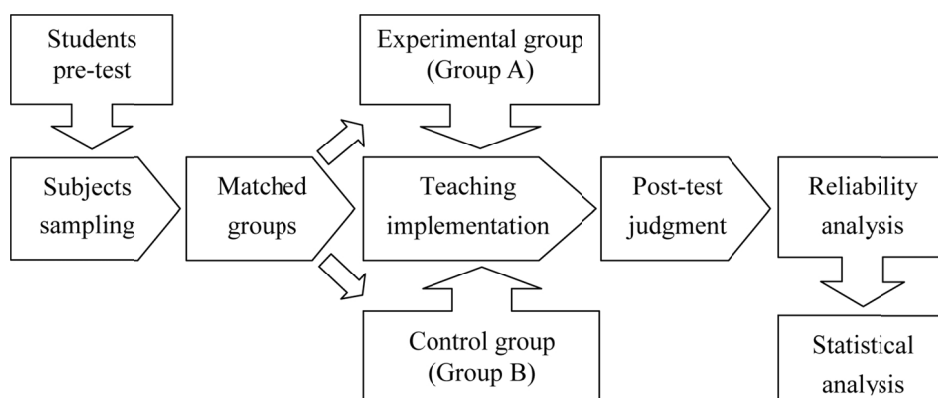


Figure 5. A flow chart for teaching experiment

3.2 Pretest and Group Matching

A purposive sampling method was applied to select the Department of Visual Communication Design freshman students (aged 18–19 years) who had received no graphic design training. Before the official experiment was conducted, 54 freshman students enrolled in the graphic design course independently created a poster (A4 size) on the theme of global warming. The required poster content included elements such as pictures, a headline, and body text, and a report of 100 words or less describing the design concept had to be submitted with each poster. The duration of the pretest was 3 hours. After the posters were created, two teachers who formerly were graphic design course instructors acted as judges, grading the posters according to four criteria: image creativity, picture aesthetic, colour application, and typography. Each criterion accounted for 25% of the total score. The scores for each criterion were summed, and then the grades given by the two judges were averaged to obtain a total pretest score.

After the pretest posters were graded, we evaluated the scores given by the judges. When the difference between the scores of a poster was ≥ 10 points, the judges reevaluated the poster. When the reevaluated scores still differed by ≥ 10 points, the poster was excluded from the experiment. Amongst the 54 pretest posters, five posters with scores differing by 10 points or more were excluded. Thus, a total of 49 posters were included in the subsequent experiment. The scores of the posters were inputted into the SPSS statistical software to conduct Spearman's rank correlation coefficient analysis. The results revealed that the Spearman's ρ value was 0.714 ($p < .05$), indicating that the scores given by the two judges were consistent.

The median (80.25 points) of the pretest scores was used as the datum point, from each side of which 15 students were selected. Therefore, a total of 30 students were chosen to participate in the teaching experiment. The pretest scores of the students were arranged from the highest to the lowest. Next, a matched groups design method was applied to assign the students into either Group A (experimental group) or Group B (control group), with 15 students in each group. The two groups of students undertook dissimilar teaching activities (Table 1). To ensure that the students were equally competent in poster designing, we calculated the averaged pretest scores and used the independent sample t test to evaluate the difference between the average scores. The results revealed that the average pretest scores of Group A (81.13 ± 5.09 points) and Group B (80.63 ± 6.52 points) differed nonsignificantly ($t = .886$, $df = 28$, $p = .381$), indicating that before participating in the experimental curriculum, the students were equally capable of poster designing.

Table 1. Grouping of the experimental participants

Score ordering	Subject 1	Subject 2	Subject 3	Subject 4	Subject 5	Subject 6	Subject 7
Group Matching	Group A	Group B	Group B	Group A	Group A	Group B	Group B
Score ordering	Subject 8	Subject 9	Subject 10	Subject 28	Subject 29	Subject 30
Group Matching	Group A	Group A	Group B	Group A	Group A	Group B

3.3 Course Design

The experimental and control group participants were subjected to 4 weeks of teaching activities. During the first 90 minutes of the weekly 3-hour course, the instructor taught the students, and the students then engaged in practical activities for the remainder of the time. Therefore, the students received a total of 720 hours of training during the 4-week period. Additionally, the instructor directed the students to each select a public welfare topic according to the course content. The students had to design three poster concepts on their selected topics and, subsequently, from amongst the three concepts, select one concept from which to design a final poster.

The course textbooks included *The Essential Principles of Graphic Design* (Millman, 2008), *Graphic Design: The New Basics* (Lupton & Phillips, 2014), *100 Ideas that Changed Graphic Design* (Heller & Vienne, 2012), and *Effective Poster Design* (Van Dalen et al., 2002). Furthermore, the ADDIE (Analysis → Design → Development → Implementation → Evaluation) teaching model was applied to guide students towards completing their posters. In the first week, course schedules for both groups were identical. However, beginning the second week, the case teaching method was used to guide the students in the control group, but course materials related to semiotic theories were excluded. By contrast, the experimental group students received additional course materials on semiotic theories and were instructed in poster creation involving aspects of images and signs. The course content of the two groups are explained as follows (Table 2):

Table 2. Curriculum content of the experimental and control groups

	Experimental group (Group A)	Control group (Group B)
	Curriculum contents	
Week 1	<p>Topic: Introduction to public welfare poster design</p> <p>Content: From the perspectives of sociology, economics, and culture, explain the definition and themes of public welfare posters and guide students in proposing a theme.</p>	<p>Topic: Introduction to public welfare poster design</p> <p>Content: From the perspectives of sociology, economics, and culture, explain the definition and themes of public welfare posters and guide students in proposing a theme.</p>
Week 2	<p>Topic: Relationship between public welfare themes and semiotic theories</p> <p>Content: Introduce the semiotic theories proposed by Saussure and Peirce and explain the implications of images and signs in posters and the process of encoding and decoding signs.</p>	<p>Topic: Styles and types of public welfare poster design</p> <p>Content: Compile and categorise the posters created by international competition winners and famous designers. Explain to students the various styles and types of poster design.</p>
Week 3	<p>Topic: Functions of images and signs in public welfare posters</p> <p>Content: Through visual terminologies including images, texts, and colours, integrate design images and visualise the thoughts of poster designers.</p>	<p>Topic: Colour and visual expression used in public welfare posters</p> <p>Content: Compile and categorise the posters created by international competition winners and famous designers. Explain to students the colour usages and visual expressions in the posters.</p>
Week 4	<p>Topic: Techniques for creating public welfare poster images</p> <p>Content: Explain how signs convey metaphors and metonymies. Guide students in applying similarities between objects to create the visual images for the posters.</p>	<p>Topic: Composition of texts and images in public welfare posters</p> <p>Content: Compile and categorise the posters created by international competition winners and famous designers. Explain to students the textual arrangements and image elements in the posters.</p>

3.4 Reliability of the Judges

After the 4-week course concluded, the two pretest judges participated in posttest evaluation. According to the four grading criteria in the pretest, the judges evaluated the posttest posters. The scores received for each criterion were summed, and the scores from each judges were averaged to obtain posttest scores. Subsequently, Spearman's rank correlation coefficient analysis was applied to examine the posttest scores. The results revealed that the Spearman's ρ values of image creativity, picture aesthetic, colour application, and typography were 0.876 ($p = .000$), 1.02 ($p = .000$), 0.634 ($p = .008$), and 0.734 ($p = .000$), respectively, indicating that the

reliability coefficients of the four grading criteria reached the $p < .05$ significance level. Furthermore, the Spearman's ρ value of the total score was 0.987 ($p = .000$), indicating that the posttest scores given by the judges were consistent. In other words, the scores of the posters created by the students during the course were statistically reliable. Therefore, subsequent analyses were conducted to examine the difference between the two groups.

4. Result

The results revealed that the average image creativity, picture aesthetic, colour application, typography, and total scores of the experimental group were 22.80 ± 0.77 , 21.93 ± 0.88 , 20.40 ± 1.01 , 21.33 ± 0.72 , and 86.85 ± 2.99 points, respectively. The average image creativity, picture aesthetic, colour application, typography, and total scores of the control group were 21.13 ± 1.36 , 20.93 ± 0.96 , 20.80 ± 1.18 , 20.53 ± 1.06 , and 83.05 ± 4.11 points, respectively. The standard deviation (SD) values of the scores received by the two groups signified that the four criterion scores and the total scores received by the experimental group were more consistent than those received by the control group (Table 3).

Table 3. Average scores and standard deviations of experimental and control groups

	Experimental group (Group A)		Control group (Group B)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Image creativity (25%)	22.80	.77	21.13	1.36
Picture aesthetic (25%)	21.93	.88	20.93	.96
Color application (25%)	20.40	1.01	20.80	1.18
Typography (25%)	21.33	.72	20.53	1.06
Total score	86.85	2.99	83.05	4.11

A one-way analysis of variance (ANOVA) method was applied to further analyse the difference between the four criterion scores and the total scores (Table 4). The results revealed that the image creativity score of the experimental group (22.80 points) was significantly higher ($F(1, 28) = 17.90$, $p = .000$) than that of the control group (21.13 points). Furthermore, the average picture aesthetic score ($M_{\text{experimental group}} = 21.93 > M_{\text{control group}} = 20.93$; $F(1, 28) = 8.80$; $p = .006$), typography score ($M_{\text{experimental group}} = 21.33 > M_{\text{control group}} = 20.53$; $F(1, 28) = 5.82$; $p = .023$), and total score ($M_{\text{experimental group}} = 86.85 > M_{\text{control group}} = 83.05$; $F(1, 28) = 8.36$; $p = .007$) of the experimental group were significantly higher than those of the control group. By contrast, the average colour application score of the experiment group differed nonsignificantly from that of the control group ($F(1, 28) = 0.99$; $p = .326$).

Table 4. One-way ANOVA results for experimental and control groups

		<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>Sig.</i>
Image creativity	Between Groups	20.83	1	20.83	17.09	.000***
	Within Groups	34.13	28	1.22		
Picture aesthetic	Between Groups	7.50	1	7.50	8.80	.006**
	Within Groups	23.87	28	.85		
Color application	Between Groups	1.20	1	1.20	.988	.329
	Within Groups	34.01	28	1.21		
Typography	Between Groups	4.80	1	4.80	5.83	.023*
	Within Groups	23.07	28	.82		
Total score	Between Groups	108.30	1	108.30	4.11	.007**
	Within Groups	362.67	28	12.95		

* $p < .05$; ** $p < .01$; *** $p < .001$.

5. Discussion

5.1 Performance on Image and Sign Use for Designing Posters

The teaching experiment confirmed that applying semiotic theories to graphic design education enhanced student ability in poster design. Particularly, the improvement in image creativity was the most noticeable compared with other aspects of designing. In other words, integrating semiotic course materials into graphic design curricula can enrich student creativity in poster design. We assert that poster designers can apply images and signs and select adequate visual elements according to the design imagery. Methods including conversion, combination, deletion, and analogy can be used to associate, encode, and transform selected visual elements in specific sign systems for creating posters. Viewers can interpret the visual sematic messages of the posters according to personal and cultural experiences. Such a process can enhance not only the creativity of poster designers but also the sense of entertainment experienced by poster viewers; thus, the designers and viewers can communicate and interact through posters.

Figures 6 and 7 illustrate posters on the theme of 'peace', created by the experimental and control group students, respectively. The creator of the poster in Figure 6 used the image of a dandelion to signify the act of spreading, creating an analogy by replacing images of the dandelion seeds with images of grenades. The dandelion seeds waft from the lower right corner to the top left corner, silhouetted against a crimson background that reflects a sense of alertness, and the poster heading is displayed by the word 'SPREAD'. Overall, this poster sarcastically addresses how fear induced by war has gradually spread worldwide. Furthermore, the completeness of the poster enables the viewer to be guided to deliberate the true implication of peace. By contrast, the creator of the poster depicted in Figure 7 predictably used the image of a dove, placing it at the centre of the poster against a background image of flames; the poster heading is displayed by the phrase 'The War-torn peace'. Because the creativity, aesthetics, and arrangement of this poster were less attractive than those of the poster in Figure 6, this poster inefficiently motivates viewers to reflect on the implication of peace. Overall, applying semiotic theories to poster design curricula enabled guiding the students in deliberating relationships amongst signs from the perspective of image implication, thereby enriching the creativity and aesthetics of the poster designs and improving the arrangement and use of poster headings.



Figure 6. Poster created by experimental group student

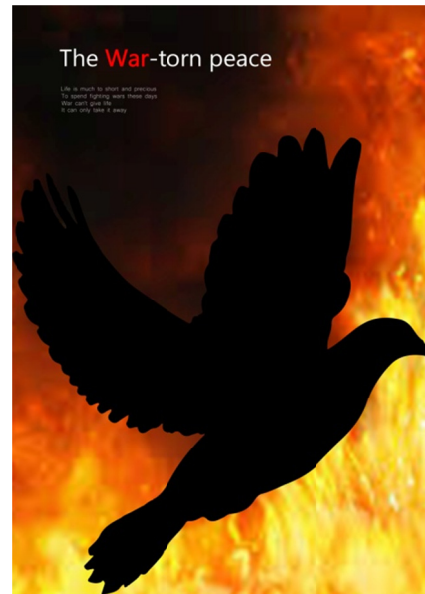


Figure 7. Poster created by control group student

5.2 Images and Signs Reinforcing the Logical Thinking of Poster Designers

According to communication principle perspectives, sign structures and information processing have been emphasised by graphic designers (Byrne, 1990). Poster design is a domain in graphic design; it utilises visual marks as a medium to convey messages. By applying meaningful images, designers can create posters that transmit information and communicate with the public. Visual marks, including texts, pictures, images, colours, and textures, are essential in graphic design because integrating such marks, or sign elements, enables posters to function as a communication medium for propagation and demonstration. Furthermore, posters function as a carrier involving image designs. Because images can be used to symbolise objects, image design is perceived as an expressive visual communication method. An image loaded with connotative information enables viewers to associate imaginings with the image content, which is directly and efficiently conveyed to the viewers. Moreover, visual information conveyed through images can complement the insufficiency of textual and audio communication. Therefore, images are a crucial aspect of poster design, and semiotic theories can be applied to strengthen the visual tension of a poster.

The process of poster design involves encoding and decoding visual images. When encoding an image, the designer must attempt to prevent the conveyed message from being misunderstood by the viewer. Therefore, we propose three approaches for mitigating this concern: (a) Associative approach: Shared experience or cultural backgrounds can be applied to develop image signs. (b) Primitive approach: A highly mentalised image is selected according to the intended message of the poster. (c) Cognitive approach: From the perspective of human cognition, the poster designer formulates an image concept consistent with the mental models of the viewers. These three approaches can be integrated through the concepts of sign characteristics (icon, index, symbol) proposed by Peirce and the theories of arbitrary and associative relation proposed by Saussure to establish a methodology for poster design. For example, to create a poster on an environmental topic such as the high coral mortality induced by pollution of the ocean, a designer can associate the symbol of death with the image of bones. Next, the iconic images of coral and bones can be integrated to form an image connoting the phenomenon of coral bleaching. Finally, a sarcastic poster heading, 'White Coral', can be added. Through this design process, the intended message of the poster can be correctly conveyed (Figure 8).

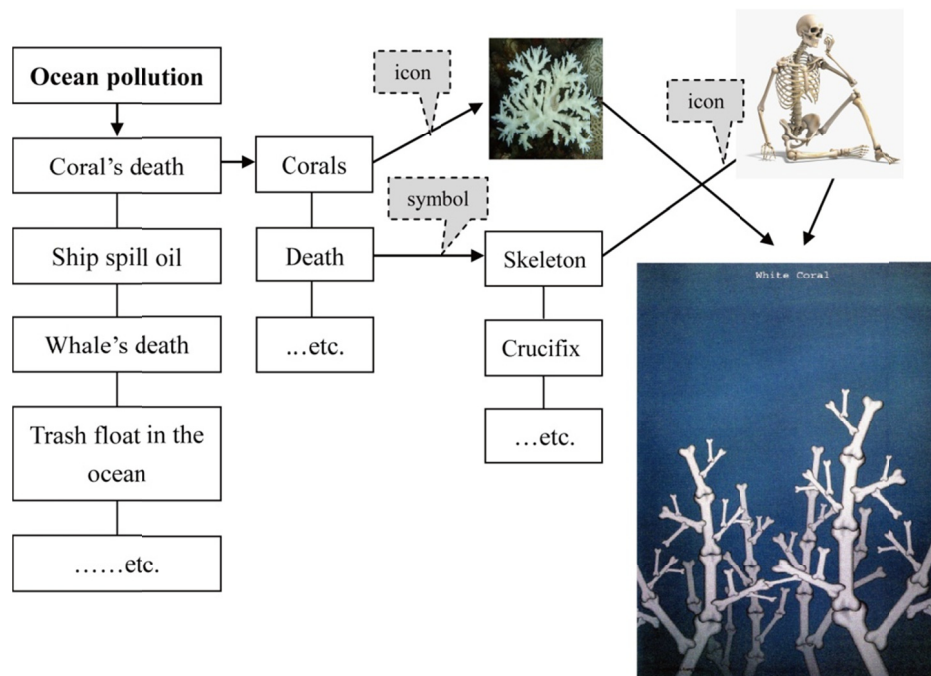



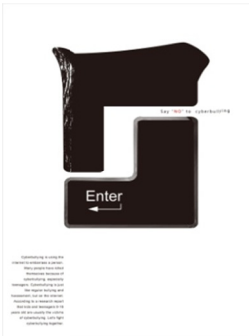


Figure 8. The process of semiotics application to the poster picture

5.3 Applicability of Semiotics to Graphic Design Education

The theories of signs proposed by Saussure indicate that the connotation of a sign can be expressed by arbitrarily combining the signifier and signified. Because these two entities are interlinked, the connotation of the sign can be unravelled over time in daily life (Saussure, 2011). Additionally, Peirce asserted that a sign comprises not only the aspect of languages but also that of phenomena, images, or any meaningful thing. Furthermore, during the process of social functioning, signs are omnipresent in everyday life; in fact, people are living amidst signs (Byrne, 1990). Therefore, images can be perceived as the visual language of graphic design. By recreating and recombining images, graphic designers can convey ideas. Furthermore, images can be defined through cultural conventions, supplemented with texts and colours, and reintegrated to visualise the concepts of designers. Hence, graphic design students should familiarise themselves with semiotic theories to enhance the profundity of their creations. After all, graphic design involves not only conveying messages but also attracting attention, improving understanding, and more importantly, resonating with viewers, to achieve the purpose of information exchange.

Graphic design is an integrated science involving elements of visual art and knowledge from cognitive psychology, philosophy, and sociology. However, eliciting a sense of novelty and curiosity from viewers without losing the communicative function of a graphic design creation has been a concern for designers. The results of the teaching experiment conducted in this study indicated that integrating semiotic theories into graphic design education to formulate poster themes through primitive and associative approaches can facilitate increasing the profundity and novelty of the works created by students as well as eliciting resonance from viewers and achieving the goal of information and emotion exchange. The posters created by the students during the teaching experiment were submitted to the 2015 International Triennial of Ecological Posters 'the 4th Block' (<http://eco-poster.org/ecoposter/>), and 4 posters from the experimental group were accepted (Table 5). By contrast, no poster from the control group was accepted, verifying that integrating semiotic theories into graphic design curricula can facilitate improving student ability in posters design. Moreover, students can refine observation capabilities by deliberating on the meanings of images and signs.

Table 5. Poster accepted in the international poster competition

Posters	Statement of poster
	<p>Signifier: An image of a popsicle (symbol) and a polar bear (icon) are integrated to illustrate how polar bears are affected by the melting of the ice.</p> <p>Signified: Global warming is a concern that must be faced together by nations worldwide. Overdevelopment by humans has gradually raised the global temperature, melting icebergs in the Arctic. If humans do not advocate carbon reduction and green energy, then polar bears</p>
	<p>Signifier: An image of the Chinese character '口' (meaning 'mouth'; index) and the enter key (icon) are used to present an image integrating both elements.</p> <p>Signified: Cyber and verbal violence are equivalent. Verbal bullying occurs when inappropriate language is used to insult a person on the Internet. Therefore, people should be cautious when commenting on the Internet to not overlook the influence of cyber and verbal bullying.</p>
	<p>Signifier: An image of a dolphin (icon) and the Japanese flag (index) are integrated to create a scene in which bleeding dolphins are collectively caught in a fishing net.</p> <p>Signified: People of the Taiji fishing village in Japan used to hunt dolphins on a large scale. Thousands of dolphins, including new-borns, were killed. Furthermore, diseases and death await dolphins raised in aquaria.</p>
	<p>Signifier: An image of a black hand and a white hand (icon), the pinkies of which are hooked and the thumbs of which touch, form the hand position symbolising a promise (between two races). A heart shape (index) becomes apparent when the poster is flipped upside down.</p> <p>Signified: Despite the continual advancement of a global society, racist comments still appear. Human rights should not be violated or trampled because of race or nationality. As long as respect for one another and commitment are embraced can love be expressed amongst people of different race.</p>

6. Conclusion

Semiotics has been integrated into design education (including graphic design) as a fundamental subject for scientising design methodology. After decades of development, design education has emphasized applying semiotics as one of the fundamental theories and methods used in designing. Therefore, numerous studies and books have addressed topics related to semiotics. Unlike in previous studies, we applied a teaching experiment to

verify the applicability of semiotic theories to poster design education. The results revealed that through the process of comprehending the meanings of images and signs, students' creativity and observation capabilities improved, as did the richness of their imaginations. This type of training enables students to clearly understand the procedures and logic behind creating a design. Moreover, the process of image and sign integration facilitates creating a poster that can clearly convey an intended message; such poster creation also imperceptibly enhances the aesthetic attainment of students.

In terms of Eastern design education, the field of graphic design in Taiwan is considered a branch of the arts. Consequently, domestic graphic design education involves training methods similar to those used in art education. Such training methods have caused students to perceive graphic design as the expression of the self and overlook the true purpose of designing. However, graphic design actually involves applying images, signs, textual structures, and aesthetic cogitation to objectify the world as perceived by designers. Therefore, the methodology, rationales, and aims of graphic design are specific. A talented artist can rely on innate ability, but an excellent graphic designer must attentively observe various objects to formulate creative designs.

From the perspective of semiotics, a sign is an integration of concepts, sounds, and images, as well as a medium for carrying and conveying information. Furthermore, a sign can be used to simplify various objects. Visual design techniques can be applied to convert details observed in the world into various signs, the elements of which can be processed and integrated to manifest the thoughts of the designer. Saussure's system of signifier and signified is in actuality a single entity featuring two distinct facets. Moreover, the three types of signs (icon, symbol, and index) proposed by Peirce can be used to epitomise the living environment and cultural history of humans. Applying the theories of arbitrary and associative relation, graphic designers can recombine and convert the meanings of signs displayed in their creations, thereby attracting viewer attention and achieving the goals of conveying information and emotion.

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