Research on Digital Application and Advantages in Dynamic Poster Design

Wenqian Zheng[1] , Dandan Zhao[2] , *Mei Lyu[3]

1940963144@qq.com[1] , 190302262@qq.com[2] , lynmei@sjzu.edu.cn[3]

Shenyang Jianzhu University, Shenyang, China

Abstract. The internet era has witnessed the efficient information dissemination that replaced the traditional channel brought by digital technology. In order to broaden and deepen the public's understanding of information communication, SPSS 26.0 was used to conduct difference test and heterogeneity test through two groups of data of the experimental group and the control group. Meanwhile, by analyzing the design principles and dynamic poster styles, dynamic posters of Marine life are designed to raise and further enhance the awareness of Marine life protection while effectively conveying important information about Marine protection. To sum up, constructing dynamic posters with new media not only realizes information transmission, but also validates the feasibility of digital design strategy. The combination of dynamic posters and digitalisation realizes the online promotion and dissemination of dynamic posters, which in return promotes the dissemination of dynamic posters via diversified strategies.

Keywords: Dynamic poster design; Digital design; Marine life; Environmental protection

1 Introduction

Marine organisms are a variety of animals, plants and microorganisms inhabiting the sea, which play an important role in the environment where human beings live. With the increasing intensity of human exploitation and utilization of the ocean, Marine ecosystems are under pressure where 41% of the world's Marine areas are seriously affected. Marine environmental pollution is increasingly aggravated that marine resources have been over-exploited, and marine species habitats destroyed. [1] In recent years, dynamic posters have become a new and well-recognised way of communication and are deeply favoured by the audience. Because of the advantages of digital communication, information can be disseminated to the society to increase the audience's attention and interest. There is no doubt that digital application will become one of the most important communication means in the future.

2 The Concept of Dynamic posters

Poster is a visual communication medium with important components. Its design consists of images, text, typography, color, and more. Dynamic poster is a combination of traditional static poster and digital technology, inherited the elements of static poster, but entails its own characteristics. [2] The visual elements in digital posters form an important carrier of cultural

communication with more information bearing capacity through dynamic processing, and can achieve efficient communication of information that channels through digital technology and the Internet. [3]

3 The communication value of dynamic posters

In the era of new media, the audience is no longer satisfied with the traditional mode of communication, but seeks something faster and more efficient, which facilitates the integration with digital media. Under such circumstances, dynamic posters, containing video and animated GIFs, function as an emerging form of digital communication. [4] New media technologies capture the audience's attention by combining animation, audio and visual elements. It can not only improve the legibility of the content, but also increase the audience's attention with valuable influence in its communication value.

3.1 Data analysis of dynamic posters on communication advantages

Considering image (the quantity of composition element, specifications, resolution), text (font size, font), layout (graphic), color (paint quantity) elements, a dynamic poster and a traditional static poster were designed. Then, two groups of testees were recruited where test data was recorded, including the test duration and participant gender, age, occupation, education level and other demographic characteristics. Experimental group participants (1 invalid sample excluded, a total of 59 effective samples) appreciate, evaluate, and compare the dynamic with the static posters. The control group participants (58 effective samples) score based on 5 individual poster viewing experience, ranging from poster content, narrative diversity, viewer attractiveness, memory effect, and visual sensory, using 10 points grading system.

Using SPSS 26.0, section 1 made descriptive statistics of the demographic characteristics, section 2 of the difference between the experimental and the control group (Pearson's chi-square test), section 3 was a heterogeneity test performed between the experimental and control group from the poster content, narrative diversity, viewer attractiveness, memory effect, and visual sensory (independent sample t-test).[5]

3.1.1 Distribution of the demographic characteristics of the participants

Shown from the descriptive statistics of demographic characteristics of participants (see table 1), the male to female ratio is close to 1:1, the majority of the participants are young and middle-aged, age distribution is balanced, most participants are of undergraduate diploma while other educational degrees are covered. Meanwhile, participants occupation distribution is relatively balanced with each profession covered. Therefore, the distribution of demographic characteristics of participants conforms to the general law of demographic characteristics and the participants were representative.

Table 1 Distribution of the demographic characteristics of the participants

Demographic characteristics		Number of participants	percentage (%)
sex	man	54	46.2

	woman	63	53.8
age	18—25	31	26.5
	26—35	39	33.3
	36—45	19	16.2
	46—50	26	22.2
	Over 50 years old	2	1.7
record of formal schooling	Elementary school below	7	6.0
	junior middle school	13	11.1
	senior middle school	18	15.4
	undergraduate course	56	47.9
	Master's degree or above	23	19.7
occupation	student	6	5.1
	teacher	17	14.5
	medical personnel	18	15.4
	Personnel of government organs and public institutions	8	6.8
	business management personnel	21	17.9
	professionals	8	6.8
	commerce	11	9.4
	service personal	9	7.7
	Agriculture, forestry, animal husbandry and fishing workers	8	6.8
	liberal professions	11	9.4

3.1.2 Comparison of the demographic characteristics of the participants

The difference in gender, age, educational background and occupation of the participants in the poster test group was not statistically significant (P> 0.05) (see Table 2), so the composition of the subjects was scientific and reasonable, and the basic requirements of the experimental design for control variables were met.

Table 2 Chi-square test for the composition ratio of demographic characteristics

Demographic characteristics	χ^2	df	P
sex	0.081	1	0.775
age	4.307	4	0.366

record of formal schooling	1.777	4	0.777
occupation	6.604	9	0.678

3.1.3 Analysis of the heterogeneity in the poster scores

According to the t-test results of independent samples (see Table 3), dynamic posters are more advantageous than traditional static posters in terms of content transmission, narrative diversity, viewer attractiveness, memory effect, visual sense and total evaluation score, and the differences between groups are statistically significant (P> 0.05), as shown in Figure 1.
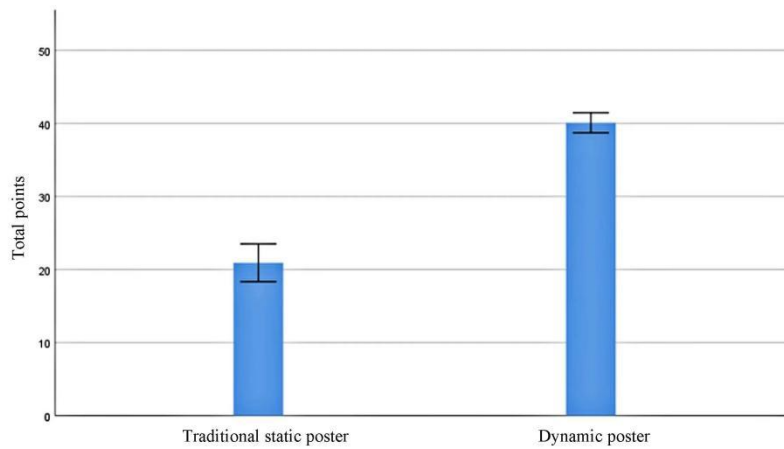
Fig. 1 . Group histogram of the total score of the poster evaluation

Table 3: Analysis of the heterogeneity of the poster scores

Evaluation item	control group (n =58)	experimental group (n =59)	t price	P price
Content communication	4.40±2.78	8.19±2.05	-8.39	＜0.001
Narrative diversity	4.28±2.85	7.95±1.83	-8.273	＜0.001
Viewer Attractiveness	3.91±2.76	7.97±1.97	-9.133	＜0.001
memorizing effect	4.34±2.71	7.83±2.24	-7.601	＜0.001
Visual senses	4.00±2.80	8.15±1.81	-9.503	＜0.001
total points	20.93±9.80	40.08±5.29	-13.126	＜0.001

3.2 The communication application of dynamic poster design

The application of digital design method can give dynamic poster design a new vitality and unique visual experience. [6] In the field of design creation, dynamic posters create more unique

and creative design pieces through vivid visual effects and beyond the boundaries of traditional media.

4 Design principles of dynamic posters based on digital applications

4.1 Digital design Overview

Digital design refers to the use of the Internet, computers, new technologies, etc., through new media and new platform, in the new digital form as the carrier of information to communicate.

With the continuous development of the Internet, digital technology provides modern society with more diversified ways to obtain information, so that information can be stored, transmitted and processed in a digital form, so that the audience can obtain information more quickly and efficiently.

4.2 Design principles of dynamic poster

Dynamic poster is a new design method based on digitalisation. It is a kind of information transmission carrier formed by integrating static design elements into dynamic design language. Through concise design expression, narrative content and consistent design elements, it presents a better visual design effect.

4.2.1 Conciseness

Dynamic posters increase the content legibility through simple design elements so that the viewers can understand the information conveyed more easily.

When designing images, the principal is to choose simple images to avoid overly complicated images that will make the information complicated and confusing to avoid affecting the audience's interpretation.

In the design of dynamic effects, the principal is to apply simple animation effects, such as transparency, gradient and other simple and clear design, which can bring a clear visual experience to the audience that will not make the audience feel dazzled, increase visual fatigue, and make the dynamic poster clear and tidy as a whole.

When applying color matching, the principal is to consider the overall color matching of the dynamic poster, minimise color use so that the overall picture is not as crowded.

In terms of layout, it is important to keep it clear, highlighting the theme content and text so as to increase the audience's memory of the information communication. Otherwise, a distorted layout can affect the audience's understanding of the information.

4.2.2 Narratives

Dynamic posters have multiple narratives. Through the design, interesting story content is embedded in the picture and the information to be transmitted is presented to the audience in a story-telling way. This method of expression can better attract the audience's attention, so that the audiences stay more focused on the dynamic poster. When the dynamic poster is embedded

in the story, it adds music, audio, dubbing, etc., to enrich the story plot and enhance the audience's multiple senses.

4.2.3 Consistency

Consistent design elements can make the dynamic poster more uniform in terms of vision. Inconsistent design elements will affect the audience's understanding of the content disseminated by the dynamic poster.

When designing, it is necessary to maintain the consistency of image, dynamic effect, style, color, font, layout, etc. Such a unified picture can not only increase the visual effect of dynamic posters, but also better disseminate information and increase the attention of the audience.

5 The Design and Application of the Marine life dynamic poster

5.1 Style design of dynamic posters of Marine life

Design style plays a crucial role in dynamic poster design. The clever use of graphics, colors, animation effects, etc., can not only enhance the visual appeal and fun of the design, but also effectively convey the information to be conveyed. At the same time, the right design style can be the icing on the cake for dynamic posters. Therefore, choosing the right style is a necessary condition for achieving the best design results.

5.1.1 Flattening

Flatness is a design style that expresses the image in a simple and intuitive visual effect. By removing complex visual graphics, simple design elements are adopted to enhance the simplicity, ease of use and comprehensibility of the design. The flat design of graphics can make the meaning expressed by graphic elements more intuitive and easy to understand. The combined dynamic effect can further make the audience's memory of the information conveyed clearer.

The design of the dynamic poster also adopts such a design principal, with a wide variety of Marine garbage rising and falling in the ocean against a pure blue background. The title gradually appears, fish swim from outside into the painting, and the background changes from a pure blue ocean to a polluted ocean full of garbage. The fish has to swim around in the ocean that is full of garbage, and eventually swim to death. Finally, the striking contrast between the blue ocean and orange fish leaves the audience a sense of warning while simple graphics through dynamic processing, produces rich and interesting visual effects to viewers. This design style can not only attract the audience's attention, but also make the audience better understand the information conveyed by the dynamic poster, as shown in Figure 2.

Fig. 2 . Flat image design

5.1.2 Reification

In the digital era, there is no "pure" image, completely graphic image. Instead, images must carry a language expression. [7] Reification is a linguistic expression that transforms an abstract concept or idea into a concrete object or image. It is widely used in design creations. In dynamic poster design, reification can better help the audience understand and remember abstract concepts so that they are more concrete rather than imaginative. Compared to complex graphics, figurative graphics are easier for the audience to understand.

In regards to ecological environment protection, reification provides clear and concrete elements for ecological environment protection. Such design expression can concretize the vicious ecological environment problem, which helps audiences clearly understand the seriousness of environmental problems, and thus consciously protect the ecological environment. For example, the figurative graphics displayed are a typical figurative design that transforms the abstract concepts of Marine litter and Marine life into concrete images, making the information conveyed by the dynamic posters more concrete. This kind of concrete design is very specific and can arouse a strong resonance of the audience who will realize the damage human beings made to the marine ecological environment, as shown in Figure 3.
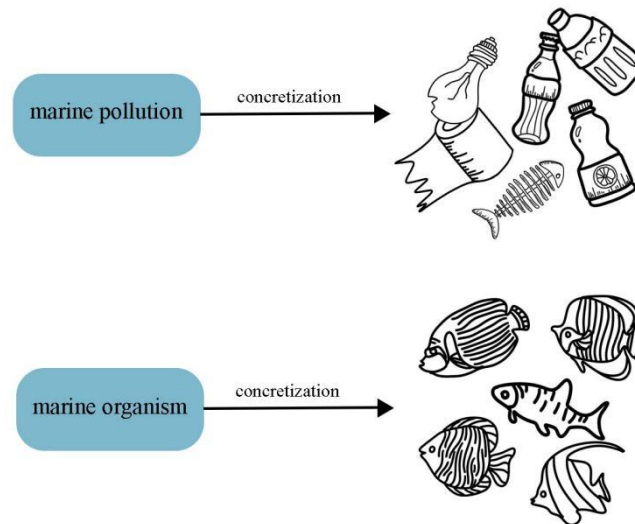
Fig. 3 . Concrete element design

The poster reified death as a skeleton. This image gives the audience a sense of shock and warning by concretizing death as a skeleton figure, displaying the serious problem the marine ecological environment is facing. The two fish trapped in the death cage symbolize the concrete marine life, expressing the suffering and death of marine life caused by marine pollution.

Combining figurative death with marine life, the design aims to convey a thought-provoking message through figurative graphics. The black skeleton adds octopus tentacles and coral decorations to symbolise the animals, plants, etc., of marine life, which is deliberately designed to call attention to the diversity of Marine life. The addition of prison bars to the skull's eyes is a meaningful element that enhances the expression of the plight of marine life. An orange fish that swims from out of the picture and enters the skeleton not only shows the death of marine life, but also predicts that humans will be trapped in a cage like fish in the polluted ocean. The design uses concrete design expressions to create this dynamic poster with a strong visual impact. Through simple and clear design elements, it successfully conveys a rich meaning, reminding human beings that destroying Marine ecology will inevitably lead to a series of problems such as species extinction, fishery resource depletion, marine pollution and global climate change, as shown in Figure 4.

Fig. 4 . Main design elements

5.2 Elements analysis of dynamic posters of Marine life

**5.2.1 Design expression of text**

In dynamic poster design, text is one of the visual elements to convey information content. Words can be used to convey information while guiding the viewer's attention. In dynamic poster design, the text composition and the choice of fonts are also very important.

The layout of the text needs to consider the size, color, alignment and other factors. Proper typography can make the text more readable and beautiful, and can also better integrate with other visual elements. For example, in dynamic poster design, the title "Underwater Creature" can be placed in the most prominent position in a hierarchical typography to attract the audience's attention.

In dynamic poster design, font color change is a clever design. Through reasonable color changes, an appealing visual effect of the poster is strengthened, making it more vivid and interesting.

The dynamic poster adopts a unique font color conversion mode, which is, the shifting two colors of white and orange, which makes the visual effect particularly outstanding with a high practical value and aesthetic value.

In the design process, the text needs to be selected according to the theme, content, overall layout and style of the dynamic poster to achieve the best visual effect. As shown in Figure 5.
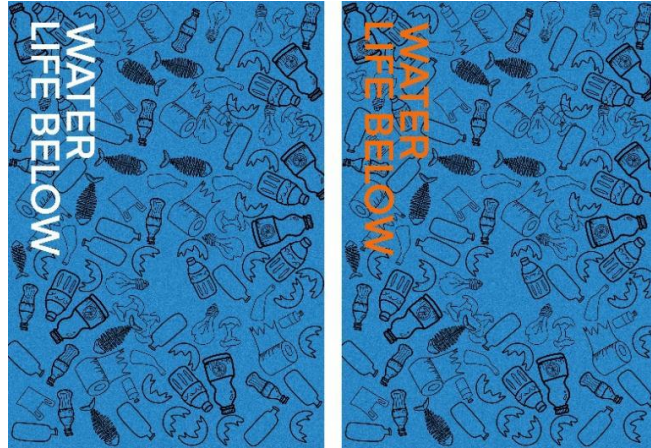
Fig. 5 . Font color changes

5.2.2 Design performance of colour matching

Color in the picture can affect the viewer's mood and mentality. In the use of color, the meaning of different colors needs to be taken into account because different colours have different meanings. For example, orange represents vitality, enthusiasm, dynamic and so on; Blue represents peace, peace, freedom, etc. Appropriate color matching can make it easier for the audience to accept and understand the message.

The color of this dynamic poster is mainly blue, supplemented by orange. It presents a visual contrast and a strong warning. When the area of one color is much larger than the area of another color, it enhances the contrast of the picture, so that the picture can be conspicuous and give the audience a strong visual stimulation. This break the boredom and brings deep impression and inspiration to the audience.

For example, in this dynamic poster, the use of complementary color combinations of blue and orange can be more eye-catching and also bring profound inspiration and sentiment to the audience. The poster takes marine blue as the main color, which forms a sharp contrast with the orange text, presenting a visual sense of the ocean's warning to human beings, highlighting the theme and profoundly alerting the world to protect marine life, as shown in Figure 6.
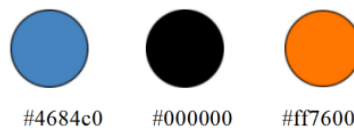
Fig. 6 . Color matching

5.3 Application

We are well aware that the ocean is one of the most important ecosystems on earth and plays a vital role in the stability of the global climate and ecosystems. However, due to the continuous expansion and pollution of human activities, the marine environment is facing an unprecedented

threat. Therefore, it is believed that protecting the ocean is everyone's responsibility. It is with a hope that through the digital dissemination of dynamic posters, the importance and necessity of protecting the ocean can be conveyed to the public so that more people can consciously take actions to reduce the damage to the marine environment and jointly protect our shared home.

The poster uses a dynamic design form to show the dynamic effect of the whole group based on three sets of animations. The first act is dominated by floating marine garbage pollution in the ocean; the second act is about the variety of fish in the ocean; and the third act is fish swimming through the marine garbage as if they are swimming towards death, as shown in Figure 7.
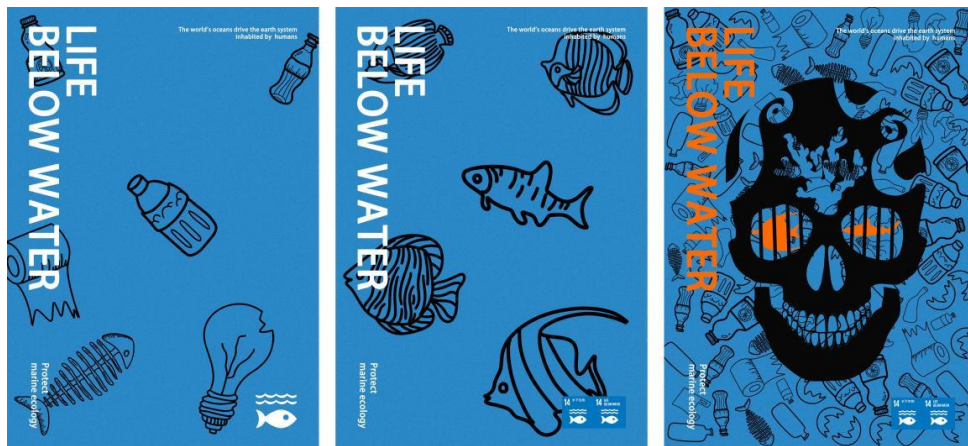

Fig. 7. Whole display of the dynamic posters of Marine life

6 Dynamic posters raise awareness of Marine conservation

6.1 Significance

The economic value and development potential of the ocean are huge. According to oceanographers, there are more than 600 kinds of economic organisms in the ocean, with a total deposit of 400 million to 600 million tons, yet only more than 80 million tons are developed and used annually. The world's marine and coastal resources and industries are with estimated value of $3 trillion, accounting for about 5% of global GDP. [8]

The starting point of this dynamic poster design is the United Nations Sustainable Development Goal 14: underwater life. It adopts dynamic digital application, reflects the United Nations Sustainable Development Goal - the status quo of underwater life, and aims at arousing human attention to sustainable development and underwater life, as shown in Figure 8.

Fig. 8 . United Nations Sustainable Development Goal 14: Underwater life logo in English and Chinese

6.2 Value and significance

The dynamic poster uses vivid visual effects and audio elements, and through digital design, allows the audience to better understand the information conveyed, arouses the audience's attention to marine life, and raise the audience's participation in marine pollution issues. It brings digital information to the audience in an interesting and innovative way to inspire interest and enthusiasm. The innovative way of using digital design brings new possibilities for information dissemination.

7 Conclusions

The living environment of marine organisms is closely related to human beings. As an important part of the community of shared future, it is necessary and urgent to promote the strategies and methods of marine biodiversity protection. Compared with traditional posters, dynamic posters are more attractive and appealing. Through the use of digital dissemination of information, audiences are deeply aware of the urgency and seriousness of the current situation of marine life, so as to provide certain theoretical guidance for the progress of biodiversity protection.

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