

Content Value Analysis of Taiwan Social Issues Advertising Design Which Using AR

Ching-Jung Fang, Ming Chuan University, Taiwan

The IAFOR Conference on Educational Research & Innovation 2022
Official Conference Proceedings

Abstract

In the past, most of the methods to publicize social issues were Graphic Poster Design or TV advertisements. However, with the development of global Internet technology, people read newspapers and magazines less than before. Therefore, the value of print ads declined significantly after 2008. On the other hand, in 2016, the proportion of watching videos online surpassed that of watching TV in Taiwan for the first time, and mobile Internet has become the most common media for Taiwanese consumers. To let the new generation pay continuous attention to social issue advertisements, new technologies must be combined to enhance the value content of advertisements. This study is based on the fact that the population of some animals in Taiwan is decreasing, and they are even on the verge of extinction. Therefore, it is necessary to promote ecological conservation. The experiment process includes literature discussion, case studies on the ecological conservation poster works of the World Wide Fund for Nature, and the illustration works of three ukiyo-e-style artists. Finally, combine AR technology to design an AR advertisement for Taiwan's conservation animals. The results of this study show that the advertising environment evolves with the development of MarTech's thinking and model, and advertising is everywhere. AR advertising with interactivity and immersion is gradually gaining consumers popularity. Social issue AR advertising uses text, images, and space to connect with the real world and it creates value to attract consumers willing to participate. It is effective in promoting the importance of ecological conservation and arousing people's awareness of ecological conservation.

Keywords: Ukiyo-e, Environmental Childcare, Illustration, Public Service Advertising

iafor

The International Academic Forum
www.iafor.org

Introduction

United Nations Secretary-General Antonio Guterres has stated that environmental deterioration caused by the human destruction of the ecosystem has affected the welfare of approximately 3.2 billion people (Tzang, 2021). Taiwan, which is located in the center of the Eastern Asia island arc, has also been affected by this event. Because of its unique island terrain, climate, and geographical environment, Taiwan boasts high biological diversity and a high proportion of endemic species. However, the loss and destruction of habitats, hunting pressure, and the introduction of alien species have drastically reduced the population of wild animals in Taiwan, even resulting in some species becoming endangered. The rapid deterioration of Taiwan's ecosystem necessitates the promotion of the prevention of extinction prevention and ecological conservation programs in a timely manner, and everyone's combined effort is required to restore the global ecosystem. Conventional promotional methods for social issues mainly involve the use of designed printed posters or television commercials. However, with the maturing and flourishing development of internet technology globally and the decreased consumption of paper newspapers and magazines, the value of printed ads has significantly decreased since 2008 (Siltanen et al., 2017). In 2016, the percentage of Taiwan's citizens who mainly watched videos online was higher than the percentage of those who mainly watched television programs. Currently, the mobile internet has become the media format with the highest engagement rate among Taiwanese consumers (Eastern Online, 2018). The influence of traditional ad media has since continued to decrease. Fifth generation mobile networks have wider bandwidths, stronger connection, low latency, and high reliability, thus they are conducive for use in big data, artificial intelligence, and Internet of Things services (e.g., Industry 4.0, smart homes, autonomous cars, smart cities, smart medicine, virtual reality, and augmented reality). Furthermore, advancements in hardware equipment have spurred the development of augmented reality (AR) and virtual reality (VR) technologies, which combine design with technology to bring about an unprecedented and revolutionary technological change (Chang & Chang, 2018). This has created a new presentation method for the design industry to convey their designs.

Posters are a crucial promotional medium in traditional media. They are the most common medium for visual expression, and they can reach various consumers of different ages, cultures, and societies. In posters, distinctive visual signals are used to convey messages. Tsai (2008) reported that among the numerous forms of design media, poster designs are the most effective in presenting visual effects and the rich imagination of a designer. The general purpose of posters is to make announcements, provide information, or promote products. On the basis of their characteristics, posters can be classified into commercial posters, cultural posters, social and education posters, and artistic posters (Yuen, 1993). In particular, the content for social and education posters mainly focuses on promoting public morals and social issues. Relative to commercial posters, which target a specific consumer group, social and education posters are targeted toward society as a whole. A 2020 survey on internet usage among Taiwan citizens reported that 82.9% of Taiwan citizens below the age of 12 years access the internet through their smartphones. This suggests that the use of smart handheld devices has increased consumer expectations for brand communication. This study combined novel AR technology with poster design to promote public welfare issues, provide consumers with a novel experience, and create public awareness for social issues related to environmental conservation.

For design style, young Taiwanese people prefer Japanese culture, including Japanese drama, music, tourism, and art, thereby creating a unique Japanophilia trend (Yang, 2019). Ukiyo-e,

a unique art style in Japanese culture, has widespread influence on contemporary illustrations and comics, and it has attracted the attention of Taiwanese citizens who embrace the Japanophilia trend. Accordingly, this study focused on the social issue of animal conservation and applied the ukiyo-e illustration style in poster design through the use of AR. The posters are expected to increase public awareness of animal conservation in Taiwan among Japanophiles. The objectives of this study are to (1) understand the Japanese ukiyo-e art style and explore innovative design in AR; (2) discuss the design and image presentation techniques used in social and education posters and conduct case analysis; (3) explore the presentation of creative thinking, images, and symbols in illustration and analyze existing illustration and design pieces; and (4) develop AR poster designs that are based on animal conservation by applying the ukiyo-e style in accordance with the analysis results.

Literature Review

Aesthetics of ukiyo-e style

The ukiyo-e style trended between the second half of the 16th century and the 19th century in Japan during the Edo period (1603-1867). After the 19th century, the style became a representation of Japanese folk art. The themes portrayed using the ukiyo-e style include characters, scenes, flowers, insects, birds, animals, and lifestyle customs. Two methods are used to create the ukiyo-e style. The first method is the draw-by-hand method, which is also referred to as the “flesh and pen” method and involves an artist drawing directly on silk or paper. The second method is the engraving method, which is also referred to as the “orthodox ukiyo-e” method; it involves an artist drawing directly on an engraving board, which is then used for printing (Chuang, 2020).

The main characteristic of the ukiyo-e style is how the pictorial space is flattened. This style abandons the conventional fixed-point perspective to present images without a depth of field, thus it is considerably different from the three-dimensional style pursued by renaissance artists. Additionally, the ukiyo-e style first outlines the image of an object before coloring it in, and lighting is not added to the image, such that lines and colors are emphasized.

The aesthetic principles of the ukiyo-e style are to (1) pursue a highly painterly two-dimensional space (the ukiyo-e style recreates three-dimensional images perceived using the eye in a two-dimensional space, and the limitations of engraving techniques result in created images featuring a flat sense of space), (2) abandon the conventional fixed-point perspective (i.e., the perspective adopted in the ukiyo-e style does not consist of a fixed focus; the style employs the scattered-point perspective to create an overall decorative effect by presenting scenery and characters on the same plane and adopts an overlapping perspective to place foreground objects over background objects, and this overlapping effect creates a sense of space), (3) use outlines to emphasize the colors on a plane (the ukiyo-e style first outlines an image before coloring it in, and lighting is not added to the image, such that colors and lines are emphasized), and (4) present lifestyle-based, elegant themes (the themes used in ukiyo-e style are diverse, mainly themed around wind, flowers, snow, the moon, mythical creatures, and daily lifestyles; Hsu, 1998; Huang, 2005).

Pictorial symbols

For a poster to achieve its purpose, its design must attract the target audience and employ pictorial elements and principles of visual culture to accurately and effectively convey its

message (Banu, 2014). Graphic symbols in posters convey key messages for the audience to make decisions on; these messages are disseminated to ensure successful communication with an audience. The coding process of a poster message involves the employment of various visual symbols and textual elements. If an audience attains an improved understanding of the symbols and elements used in a poster, the effects of graphic symbols and message coding is regarded to be more successful (Firouzeh & Hamed, 2014). Graphic symbols can convey messages to achieve the objective of communication and prompt an audience to connect with other associated ideas, thereby allowing for the complete portrayal of the symbolic meaning of a graphic image. With the evolution of culture and society, an abundance of graphic symbols with diverse meanings and implications have been created (Tsai, 2008).

Wang (2011) proposed the 13 graphic symbol presentation methods as follows: (1) Form isomorphism: This method transcends common sense by combining two different forms of visual elements to create a new creative image. (2) Form deconstruction and reconstruction: This method segments visual elements and intentionally reconstructs the segments in accordance with the intended design. (3) Replacement reconstruction: This method replaces image aspects on the basis of the similarities between forms, thereby altering the forms presented in an image. (4) Paradoxical imagery: this method makes the impossible possible by creating a paradoxical image to represent a reasonable moral. (5) Adaptive and filled-in imagery: This method integrates an image into a simple structure, thereby making the interior aspect of the image diverse and complicated while maintaining the structural simplicity of its exterior. (6) Symbiosis and positive–negative imagery: This method uses the positive and negative spaces of an image to present separate meanings that convey the message of the imagery (e.g., figure–ground illusion). (7) Textual image presentation: This method uses the text in an image as the foundation for developing creative images. (8) Profiling formation: This method creates new visual meanings by combining different elements to create an image that is lively. (9) Hidden formulation: This method prevents an audience from directly interpreting the meaning of an image and requires them to closely observe the image to reveal its hidden meaning, thereby creating a double entendre effect. (10) Visual hallucination and optical illusion: This method causes an image to distort and transform under specific conditions, thereby creating a visual illusion. (11) Visual extension: This method requires an audience to infer the meaning of an image through imagination and extension. (12) Grafting and fusion: This method ignores technological limitations and combines two different objects that are correlated and complementary. (13) Heteromorphic imaging: This method uses the contrasting relationship between images to express an intended meaning.

Augmented reality interaction design

With the rapid increase in the number of smart network device users, AR has become the new human–machine interface for connecting the digital world with the physical world. Expenditure on AR technology was expected to hit US\$60 billion in 2020. AR technology affects organizations in every industry, from universities to social enterprises. It influences how we learn, make decisions, and interact with the physical world (Porter & Heppelmann, 2017). Brand and social issue advertisements must convey their messages accurately and increase their influence to flexibly and humanely present themselves to the audience. The use of AI, AR, and VR technology in brand or social-issue advertising can overcome the limitations of traditional design thinking and create a more innovative approach through creative interactions. Through the combination of these technologies with mobile applications, the design of advertisements and promotions can outperform existing monotonous and

unidirectional advertisement methods; the application of technology can increase an audience's perceived freshness of a brand or social issue (BRANDinLABS, 2015).

AR employs the characteristics of digital overlay to overlap virtual objects over the real world (Azuma, 1997). Kounavis et al. (2012) regarded AR as a visual technology for integrating multimedia messages with the real world. Most AR systems overlap virtual messages over physical objects and spaces to enhance the continuity of space and time (Azuma, Billinghurst & Klinker, 2011). Early AR monitors are head-mounted displays that are placed over a user's eyes; this amplifies the user's perception of an image that is projected on a small screen. Currently, AR technology is applied in marker-based operations. Users can use their smartphones to scan cards with AR-code images to view the corresponding AR images on a web browser.

Huang (2018) proposed the use of AR to create 10 types of user experiences, namely visualized experiences, augmented experiences, real-time translation experiences, magical experiences, multisensory experiences, guidance experiences, communication experiences, superhuman experiences, real-time measurement experiences, and highly customized experiences. The operation of AR technology is dependent on the use of smartphones, tablets, computers, or hardware installed with AR software and cameras that track objects in the physical world. These objects include icons, images, objects, sounds, positions, or even people. Input data pertaining to an object is processed by software and compared with the corresponding data in a database. If the input data matches those in the database, the AR experience is initiated, and digital content is overlapped over the physical world. The present study applied AR technology to design posters on social issues that are related to animal conservation in Taiwan; this was achieved by applying the ukiyo-e illustration style to create awareness among the young population.

The AR poster designed in the present study was created a story-based narrative on animal survival and the ecological environment. An anti-structure, anti-perspective, anti-proportion, and anti-order design thinking process was implemented, and the designed poster uses the ukiyo-e illustration style to advocate the crucial role of animal conservation for rare species.

Research method

The research framework is divided into five stages. In the first stage, the poster theme was determined and the design motivation and purpose were clarified. In the second stage, a literature review was conducted to explore the literature on the aesthetics of the ukiyo-e style, graphic symbols, and AR interactive designs. In the third stage, the research method and poster design were planned. A case analysis was conducted to analyze posters on social issues related to animal conservation and ukiyo-e illustrations to obtain an understanding of previously applied design methods and to provide a reference for the poster design of the present study. In the fourth stage, the results of the design creation are discussed; the data collected in stages two and three and the data analysis results are applied to the design and creation of an AR poster that consists of illustrations that promote the conservation of rare species in Taiwan. In the fifth stage, the conclusion and suggestions of the present study are proposed. In the present study, a case analysis was conducted to explore the designs of animal conservation posters and ukiyo-e style illustrations. The analysis content and results are as follows:

Case analysis of animal conservation posters

The present study collected promotional posters of the World Wide Fund For Nature and selected 15 posters on social issues related to animal conservation for case analysis to explore the themes and graphic symbols presented in these posters. The analysis results are as follows. (1) Theme and purpose: Among the 15 cases, seven (46.67%) conveyed the message “disappearance of animals”, five (33.33%) conveyed the message “human destruction”, and three (20.00%) conveyed the message “self-reflections of humans.” Accordingly, the themes explored in the posters on social issues related to animal conservation were mainly focused on promoting the message of disappearance of animals. These posters warn of the threats to endangered species and highlight the urgency of animal conservation. (2) Image presentation and form: The present study referenced the 13 graphic symbol presentation methods proposed by Wang (2011) for content analysis. Among the 15 cases, five used the profiling formulation method (33.33%), three (20.00%) used the visual extension method, two used the paradoxical imagery method (13.33%), two (13.33%) used the grafting and fusion method, one (6.67%) used the adaptive and filled-in imagery method, one (6.67%) used the hidden formulation method, and one (6.67%) used the textual image presentation method (Table 1). Accordingly, among the 15 cases, the profiling formation method was most frequently employed method for presenting graphic symbols. This presentation method emphasizes the visual meaning created by combining various visual elements, which prompts an audience to connect with other associated ideas using the clues provided in an image to understand the purpose of the conveyed message. Additionally, the combination of numerous visual elements in an image can increase an audience’s interest in the image. Therefore, the present study applied the profiling formation method to design an AR poster on animal conservation in Taiwan.

Table 1 Case studies of WWF animal protection posters

Item	Types	Quantity	%	Percent total
theme purpose	disappearance of animals	7	46.67%	100%
	human destruction	5	33.33%	
	self-reflections of humans	3	20.00%	
pictorial representation	form isomorphism	0	0.00%	100%
	form deconstruction and reconstruction	0	0.00%	
	replacement reconstruction	0	0.00%	
	paradoxical imagery	2	13.33%	
	adaptive and filled-in imagery	1	6.67%	
	symbiosis and positive-negative imagery	0	0.00%	
	textual image presentation	1	6.67%	
	profiling formation	5	33.33%	
	invisible composition	1	6.67%	
	visual hallucination and optical illusion	0	0.00%	
	visual extension	3	20.00%	
	grafting and fusion	2	13.33%	
	heteromorphic imaging	0	0.00%	

Case analysis on ukiyo-e style illustrations

The present study examined 15 ukiyo-e style illustrations by the Chinese illustrator Rlon Wang, United Kingdom illustrator Daniel Mackie, and Singaporean illustrator William Chua for case analysis. The analysis content included the illustration content, the design thinking approach, and the use of colors and art media. The analysis results revealed the statistics as follows. (1) Illustration content: Among the 15 cases, five (33.33%) depicted a story-based narrative, five (33.33%) depicted the ecological environment, and five (33.33%) depicted the anthropomorphism of animals. Accordingly, the results indicated that the three illustrators used images of animals to convey various messages. In particular, the illustrations all feature enlarged images of animals to visually indicate that animals are the theme of the illustration. (2) Design thinking approach: The present study categorized the design thinking approach of the images on the basis of the creative thinking categories proposed by Song and Liu (2011). Among the illustrations, five(33.33%) adopted anti-structure and anti-perspective design thinking , five (33.33%) adopted anti-proportional and anti-order visual thinking, three (20.00%) adopted anti-structure visual thinking, and two (13.33%) adopted anti-perspective thinking. The results revealed that the illustrations mostly employed anti-proportional visual thinking that contrasted with the context of daily life. By adopting this approach, the illustrators altered the functions or positions of the objects depicted in their illustrations and used multiple vanishing points and multiple horizon lines to transgress the natural and society order, thereby creating attractive images. (3) Use of colors: All 15 illustrations (100.00%) used bright colors to distinguish the foreground and background, allowing an audience to focus on their themes. (4) Art media: Among the illustrations, five(33.33%) were drawn by hand, five (33.33%) were drawn by both hand and computer graphics, and five (33.33%) were drawn using solely computer graphics. The results indicated that different illustrators used different drawing methods to produce illustrations of a similar quality.

Table 2 Case studies of illustrations in Ukiyo-e style

Item	Types	Quantity	%	Percent total
the illustration content	a story-based narrative	5	33.33%	100%
	depicted the ecological environment	5	33.33%	
	depicted the anthropomorphism of animals	5	33.33%	
the design thinking approach	anti-structure and anti-perspective	5	33.33%	100%
	anti-proportional and anti-order	5	33.33%	
	anti-structure	3	20.00%	
	anti-perspective	2	13.33%	
use of colors	bright colors	15	100.00%	100%
	dull colors	0	0.00%	
art media	drawn by hand	5	33.33%	100%
	drawn by both hand and computer graphics	5	33.33%	
	drawn using solely computer graphics	5	33.33%	

Results and discussion pertaining to design creation

Design sampling

The Chianan Plain is the largest alluvial plain in Taiwan. The region receives abundant rainfall in the summer and is a key habitat for frog species. *Rhacophorus arvalis* is a species that is endemic to Taiwan, and it is mainly found in low-altitude agricultural bamboo forests, secondary-growth forests, and orchards in Yunlin, Chiayi, and Tainan. In recent years, the aforementioned regions have been replanted to grow pineapples and oranges, which has reduced the habitat of the species and led to their dispersion. This threatens the ecological development of *R. arvalis* and results in a declining population, thereby pushing the species closer to extinction (Chen & Liu, 2017). On the basis of the protected species categories in the list of protected wild animals that was established in accordance with the Wildlife Conservation Act by the Council of Agriculture, Executive Yuan, endemic species in Taiwan are classified into endangered species and rare and valuable species. The present study selected the endangered species *R. arvalis* as the subject for poster design. Prior to the start of the design process, the authors conducted a review on literature, and they collected and analyzed data to determine the main characteristics and habits of the species and the reasons why it is endangered. This process facilitated the subsequent design process in which converting graphic symbols were converted into design.

Design process for creating graphic symbols and augmented reality

In this stage, the authors adopted the ukiyo-e style in the illustration design process to present the characteristics of *R. arvalis*, including its living environment, food, and habits. The four principles of reverse thinking (i.e., anti-structure, anti-perspective, anti-proportion, and anti-order design thinking) were integrated and used for the coding of graphic symbols to highlight how the species is influenced by the planting of pineapples and the changes to its original habitat. Accordingly, the illustrations depicted the overturning of the natural order.

For AR design, the present study divided the AR experience into emotional and rational experiences. The emotional experience presents the environmental habitat of the *R. arvalis* before its destruction. The AR design presented a rainy background and highlighted that *R. arvalis* often called after a rainy night. Users may click on the poster to experience the species' habitat and the wonderful melodies that it created by calling. The rational experience consisted of a 15-s auditory introduction of the species. Additionally, users were asked three questions to increase user engagement and deepen their understanding of the species. The AR design provided users with an immersive experience and used multisensory stimulation, including visual, tactile and auditory stimulation, to strengthen users' understanding of the crucial role of animal conservation for endangered species. The designed AR poster is presented in Figure 1.



AR conservation poster, scan QR cord



Click to appear rain scene



Click to listen to the 15-s species introduction



Click to make the species chirping sound, click at will to form a melody.



Click for Q&A



Response



the End

Figure 1 the *R. arvalis* AR poster design

Source: Produced by Chang, W. Y.

Conclusions

Conventional promotional methods for social issues mainly consisted of designed printed posters or advertisements. In the contemporary era, such promotional methods are considered by the young generation to be overly statistical and unengaging, thus they less likely to attract the attention of this generation. Given that the young generation embrace Japanese culture and that the ukiyo-e style is a major Japanese drawing technique, the present study applied the ukiyo-e style to design a poster aimed at promoting the problem of the decreasing population of wild animals in Taiwan. Additionally, AR technology was applied to the design of the poster to raise awareness regarding this social issue among the young generation, thereby promoting the crucial role of ecological environment conservation. The present study analyzed the design and graphic symbols used in ukiyo-e style illustrations and combined the

analysis results with AR technology to design an AR poster that is based on *R. arvalis*, which is an endangered species that is endemic to Taiwan. The research conclusions are as follows: The case analysis of the posters of the World Wide Fund For Nature (which advocate the social issue of animal conservation) revealed that most posters employed the profiling formation method to present graphic symbols. This method combines different visual elements to convey a visual meaning, is easy to understand, and creates an entertaining imagery. Most of the analyzed posters convey the message “the disappearance of animals,” which emphasizes the threat of disappearing animal populations.

The case analysis of the collected ukiyo-e style illustrations revealed that most illustrations feature enlarged images of animals to clearly indicate that animals are the main theme. For design thinking, most illustrations applied reverse thinking to transform their subjects into unfamiliar forms, thereby enhancing their attractiveness.

On the basis of the results of the case analyses, the present study adopted reverse thinking to develop the content of the designed image. The profiling formation method was employed for the presentation of graphic symbols. The designed AR poster employs the ukiyo-e style to convey the message of “the disappearance of animals,” and it uses a brief auditory introduction and question-and-answer activities to enhance the narrative of the social issue, attract the attention of the young generation, and achieve the design objective of creating an interactive experience.

AR technology was applied to the poster design process not as a complete replacement of the conventional poster but as a means of enhancing the promotional effect of conventional posters through the creation of an immerse experience. This application employs new technology to enhance the liveliness of printed posters by including AR elements. In summary, the present study included AR elements into the design of an animal conservation poster to simulate a multisensory experience (i.e., visual, tactile, and auditory experiences), thereby “immersing” users in the social issue through virtual and real interactions. Consequently, the poster enhanced the value and uniqueness of the reading content and attracts consumers to actively engage with the poster, thereby successfully promoting the social issue.

In the current stage, the present study completed the design of an AR poster that is based on *R. arvalis*, which is an endangered species that is endemic to Taiwan. Future studies can reference the proposed design method to design AR posters that are based on other endangered species; these posters can provide the young generation with a learning experience, raise awareness regarding social issues, improve the environment, and promote ecological conservation. Additionally, the present study designed a questionnaire survey to evaluate the effectiveness of the designed AR poster in communicating with the young generation.

Acknowledgements

This study was sponsored by Taiwan’s Ministry of Science and Technology (MOST) under the research project no. MOST 110-2410-H-130-043. We hereby express our gratitude.

References

- Azuma, R. T. (1997). A survey of augmented reality. *Presence*, 6(4), 355-385.
- Azuma, R., Billinghurst, M., & Klinker, G. (2011). Special section on mobile augmented reality. *Computers & Graphics*, 35(4), vii-viii.
- Banu, I. (2014). Reflection of Anatolian Culture in Poster Design. *Procedia - Social and Behavioral Sciences*, 122, 230-235.
- BRANDinLABS (2015). *McDonald's instant interactive ad, sales were 18% higher than expected in just three seconds!!* Retrieved from: <https://www.brandinlabs.com>.
- Chang, J. M. & Chang, L. Z. (2018). The 5G era will change your life and mine, and will set off an unprecedented industrial revolution. *Central News Agency*. Retrieved from: <https://www.cna.com.tw/news/firstnews/201902100042.aspx>.
- Chen, S. & Liu, J. N. (2017). The threats and problem affecting the survival of farmland green tree frog (*Rhacophorus arvalis*) in Chiayi area. *Nature Conservation Quarterly*, 99, 34-43.
- Chuang, Z. X. (2020). *What is Ukiyo-e, synonymous with Japanese culture? From the analysis of painting style, representative painters, and famous works, we will introduce you to the Edo period in Japan*. March 5, 2020, Retrieved from: <https://en.compathy.net/magazine/2020/01/30/japan-art-ukiyoel/>.
- Eastern Online (2018). "Transition of Physical and Digital Advertising" *The advertising market is flipping, how to target the target audience?* Retrieved from: <https://www.smartm.com.tw/article/35313532cea3>
- Firouzeh, K. & Hamed, M. A. (2014). The Role of Portrait in Iranian Cinema Posters Design. *Procedia - Social and Behavioral Sciences*, 155, 460-464.
- Hsu K. C. (1998). Analyzing the Artistic Characteristics of Ukiyo-e and Impressionism in Japan - Exhibition of Famous Western Paintings from the Collection of the Fuji Art Museum in Tokyo. *Journal of the National Sun Yat-Sen Memorial Hall*, 196-21.
- Huang, F. Z. (2005). *A study of skills of Ukiyoe woodcut print applying to visual communication design- poster design of the landscape illustration of Tainan county*. Unpublished master's thesis. Taipei City: In-service Master Program of Design, National Taiwan Normal University.
- Huang, M. (2018). *How Augmented Human Technology Shapes New Realities* (Original Papagiannis, H. Augmented Human.). Taipei City: GOTOP
- Kounavis, C. D., Kasimati, A. E., Zamani, E. D. & Giaglis, G. M. (2012). Enhancing the tourism experience through mobile augmented reality: Challenges and prospects. *International Journal of Engineering Business Management*, 4(10), 1-6.

Porter, M. & Heppelmann, J. (2017). Why Every Organization Needs an Augmented Reality Strategy, *Harvard Business review*, November–December.

Siltanen, S., Aikala M., Jarvinen, S. & Valjus, V. (2017). Augmented Reality Enriches Print Media and Revitalizes Media Business. *Computers in Entertainment*, 15(3), 4, 1-15.

Tsai, C. (2008). U.S. WWII Propaganda Poster's War Image and Symbol. *Journal of Commercial Design*, 12, 97-116. doi:10.29514/TJCD.200811.0007

Tzang, P. A. (2021). Restoring Ecosystems The United Nations launched a ten-year conservation plan. *United Daily News*. Retrieved from: <https://udn.com/news/story/6809/5513119>.

Wang, Z. J. (2011). *Concepts and principles of graphic design and image design must be learned*. New Taipei City: DrMaster Press Co., Ltd.

Yang, A. Q. (2019). Learn Japanese while watching dramas! KKTv Japanese subtitle service has become a new channel for language learning. *TechNews*, 2019.06.26. Retrieved from: <https://technews.tw/2019/06/26/kktv-japanese-subtitle-service-and-its-diversified-contents/>

Yuen, M. L. (1993). *Introduction to Poster Design: A brief introduction to poster design*. Taipei: Taipei Fine Arts Museum.

Contact email: cjfang@mail.mcu.edu.tw