Study of signage design and information content for The Namtok Sai Khao National Park

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Abstract. The Namtok Sai Khao National Park is one of the well-recognized national parks in Thailand's southern region, accommodating both Thai and foreign visitors. Therefore, providing accurate and adequate information is essential to tourists and will enhance their travel experience. Signage is an essential tool to communicate information, rules and even reflect the appearance of the park. Data was gathered using two main methods: 1) visual content analysis of existing park signage; and, 2) and an on-site survey aimed at assessing user experience. Analysis of this data served as the basis for the development of a set of design guidelines aimed at improving the signage by restructuring the graphic elements and system and including greater support for foreign language visitors.

1. Introduction

Sai Khao waterfall was officially announced in the Government Gazette, dated May 28, 2008, as Namtok Sai Khao National Park. The 110th National Park of Thailand [1]. The Namtok Sai Khao National Park is located in three provinces, Pattani, Yala, and Songkhla, where many Thai-Muslims live. It is also close to major tourist attractions such as Chang Hai Temple, which has many foreign tourists who frequently visited. Therefore, the Namtok Sai Khao National Park must accommodate various tourists in terms of ethnicity and language.

In 2018, the Department of National Parks wild animals and plants collected revenue from across the country as high as 2,708 million baht, which is the highest record in 12 years of the establishment reflects the estimated increase in foreign tourists [2]. Therefore, to support and service an increased number of tourists, the national park needs to be more prepared. However, preparing more increasing the number of staff to serve tourists similar to recreational attractions may seem contradictory to the model of natural tourism. Therefore, communication signs within the park are vital to help, guide, and communicate with visitors. Moreover, this preparation will positively affect the change in tourism after the COVID pandemic.

2. Problem statement
Since the establishment of Namtok Sai Khao National Park as a natural attraction that provides tourists with an understanding of natural resources, environment, and conservation, signage can be considered as an essential factor to deliver messages and communicate with the visitor. However, over a decade, those signs may have been left unattended in graphical aspect, information content, and languages usage for communication. The usage of inconsistent and inefficient graphic elements throughout the signage system will force visitors to learn new representations each time they meet new signage. The variability of chosen typeface also creates confusion of which is more casual and deliberate. Furthermore, from statistics of the past five years, the number of tourists increased by an average of 123,970 per year [2], and the trend of foreign tourists increased by 11.75 times. In addition, there are various ethnicities, languages, and cultures that signage should be served in multi-languages to support the changes. Therefore, to leverage signage functionality, current design practice should be involved in this state.

3. Purpose of the study
This article aims to propose the study of existing signage and information content of The Namtok Sai Khao National Park visitor based on the environmental graphic design criteria.

4. Literature Reviews
4.1. Kind of sign information content
According to Calori, C., & Vanden-Eynden, D. [3], the explicit purpose of environmental graphic design is to communicate meaningful information via words, symbols, diagrams, and images. Therefore Calori, C., & Vanden-Eynden, D. [3] categorize sign information content into seven kinds base on their functionality 1. Identification signs, 2. Directional Signs, 3. Warning Signs, 4. Regulatory and Prohibitory Signs, 5. Operational Signs, 6. Honorific Signs, and 7. interpretive signage. Which all kinds of sign information content should links and work together informationally.

4.2. Graphic system
The environmental graphic design approach toward the set up of graphic system has involved terminologies included typography, symbols, color, diagrams, and other graphic elements such as rules, bars, circles, squares, and other geometric and decorative or illustrative elements [3]. Additional to essential design elements and visual quality of images, Thai font appears to be a significant issue. In Katherine Haenschen & Daniel J. Tamul study [4], the results show that typefaces, typeface classifications, and typeface styles are perceived to have ideological qualities. Therefore, the choice of lettering between Thai loop and loopless should be noted in this study by considering the style of Latin fonts in combination with Thai font.

4.3. Visual content analysis
Visual content analysis will be an effective procedure if precise hypotheses and clearly defined concepts underpin its use [5]. The study classified Kinds of sign information content as value to set up seven distinctive tables and 21 design criteria as variables. The detailed content analysis can respond as statements describing the findings and articulate explanations and recommendations [5].

5. Research Methods
5.1. Analysis of visual content
5.1.1 Preliminary. Planning on research field by studying the Department of National Parks database on travel routes within the Namtok Sai Khao National Park area, mapping and dividing the area for visual documentation route (figure 1.2).

Figure 1. Signage location and visitable area # 1 (due to covid regulation) for visual documentation.

Figure 2. Signage location and visitable area # 2 (due to covid regulation) for visual documentation.
5.1.2 Visual data analysis. Before analyzing the image data, the researchers designed an analysis tool that divided the signs into seven categories according to environmental graphic design criteria. The tools consisted of 21 design touchstones relevant to visual communication and language for communication. Each type of signage may not be subjected to all 21 criteria depending on signage function and capacity.

The criterions used in the data analysis tool can be categorized into three majors topics 1. graphic system, 2. information content, 3. language usage for communication. Each topic will contain the following listed sub-topics.

1. Graphic system
   - Types of Thai Letters: Loop / Loopless
   - Types of Latin letters: Serif / San Serif
   - Font weight: Bold/Standard/Thin/Italic
   - Readability / Legibility
   - Characteristics of Font
   - Text and Background colors
   - Selection of uppercase/lowercase/headings of the Latin alphabet
   - Selection of different sizes.
   - Layout design

2. Information content
   - Use of symbols in communication
   - Quality of the selected symbol
   - Use of pictures in communication
   - Quality of the selected picture
   - Use of graphics in communication
   - Quality of the selected graphics
   - Interrelation of the information on the sign and the actual location
   - Accessible supplementary information (QR Code, Website, ETC.)

3. Language used for communication.
   - Number of languages
   - Communication accuracy of the secondary language
   - Usage Braille
   - Other additional remarks

The on-site visual data documentation process was planned for two round trips to ensure that all visible signages were collected. Individual signage was categorized into an analysis sheet and proceed further with a criteria checklist (figure 3).
5.2. On site visitor interview
The questionnaire in this research was divided into two sessions. The first part was a collection of background information about the ethnicity, and the second part was a structured questionnaire based on the functionality of signage type and empirical experience of the visitor.

6. Results and discussion

6.1. Typography consideration
The choice of loop and loop-less Thai fonts gives a different feel and has a different implementation. Thai loop-less fonts represent contemporariness, but Thai looped fonts have a greater capacity for readability and legibility. However, it is best to choose or designate a font that maintains its formality but not obsolete—considering the variety of font size and weight to create visual hierarchy while keeping consistency through the entire signage system. The use of serif and sans-serif in Latin characters should be incorporated with the selected Thai font, representing formality and contemporariness.

6.2. Visual communication consideration
There are several points in overall layout design that can be taken into account for consideration. Hierarchy issue is vital to most Regulatory and Prohibitory signage due to the lack of typography sizing and the vast amount of information in some pieces. The use of font and background colour pairs should be clearly defined and designed in the same direction, or construct guidelines for each type of signage by categorizing them according to their type.

Withal, the use of symbols to enhance the communication ability of the sign, especially the use of pictogram, should be checked to ensure that the use is accurate and universal in order to prevent misunderstandings in communication, and It should be utilized with graphic elements in the signage that need interpretation.

The use of illustrations in communication should pay attention to the quality of the images and the clarity without sacrificing aesthetical sense, determining guidelines for selecting and processing images before use based on overall harmony. Nonetheless, redundant images should be prohibited in...
order to avoid confusion among the audience. The selection of images for communication with graphic elements should have a consistent, straightforward, non-conflicting approach to increase interest and create a positive impression on visitors.

6.3. Language consideration
There were three languages used in all signs through the study, but most signage use only Thai. In addition, English and Malay should be taken into account to cater to diverse ethnicity. An expert should check translation accuracy before production and installation to prevent impaired communication. The signage should include braille, primarily Interpretive sign, and there should be an additional channel to provide further information, such as QR Code.

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