

STORYTELLING OF THAI HERBAL PLANTS: AN EXPLORATION OF BIOPHILIC DESIGN PRINCIPLES IN ART AND DESIGN

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ABSTRACT

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Understanding the full benefits of plants throughout their life cycles requires strategies beyond simply explaining their medicinal uses. Herbs play a vital role in human existence, significantly impacting both physical health and psychological well-being. This article, derived from the creative research project 'Storytelling of Herbs (and Us)', aims to achieve three primary objectives: 1) to explore strategies for conveying herbal knowledge through art and design; 2) to investigate storytelling methods that communicate the unique characteristics and benefits of herbs; and 3) to experiment with creative works that foster awareness of the reciprocal relationship between humans and plants. This study employs a qualitative research design, with data collected through expert consultation and creative experimentation. The process focuses on applying biophilic design principles to the storytelling of Thai herbal plants, specifically the *Pat Hin* species from Chaiyaphum Province, with the outcomes presented in a mixed-media exhibition. The findings indicate that conveying narratives about Thai herbal plants through art and design, integrated with biophilic storytelling, offers a powerful tool for communicating human-plant interdependence. Furthermore, this study offers a creative prototype and an aesthetic model as a framework for scholars and practitioners in art, design, and botanical communication.

Keywords: Biophilic design; Thai herbal plants; storytelling in art; Pat Hin; botanical communication

1. INTRODUCTION

The exploration of how humans convey stories, aesthetic values, and plant characteristics through visual art reveals a practice that has endured since ancient times. This interdisciplinary approach, integrating art, design, and science, enhances the depth of the study. Research goals and strategies should be interpreted within historical, social, and scientific contexts. While botanists, pharmacologists, and related disciplines frequently examine the history of plants and their use in the existing literature—including inscriptions and palm-leaf manuscripts—their studies often prioritise medicinal properties over the strategies for conveying plant narratives through visual art. The 'Storytelling of Herb (and Us)' project addresses this gap by focusing

on creative strategies, interpretation, transcription, and the narration of herbal stories. Additionally, experimental works that apply biophilic design principles are included to explore narrative connections between plants and humans. The intention is not only to communicate stories about plants but also to raise awareness of the interconnectedness between humans, plants, and their surrounding environment.

2. BACKGROUND

The significance of this study stems from escalating environmental challenges, which have inevitably reshaped human life in the twenty-first century. According to the World Health Organization (2023), there has been a significant rise in global warming, natural disasters, and non-communicable chronic diseases (NCDs). To find a holistic solution, this study revisits classic paradigms; for instance, the work of Hippocrates, the father of medicine, postulated that the environment affects human health. His concept has been further reviewed by Harvard University's public health project, 'Airs, Waters and Places' (Staff Writer, 2017). However, addressing these challenges from a single dimension may not achieve sustainable goals. In response to the limitations of traditional science, experimental methods have emerged globally to explore new forms of dynamic creative work across multiple disciplines. Art as a tool for raising awareness of environmental conservation has manifested tangibly in movements such as Land Art in the 1960s and 1970s, which utilised art to communicate the relationship between humans and the environment. Artists chose to use natural decomposing materials to promote the ecosystem (Brady, 2007). While the influence of the Land Art concept remains profoundly relevant in the current century, the problem of using unfriendly materials in natural areas merits further reflection (Brady, 2007). Accordingly, this research investigates how art and design can enhance ecological preservation and prevent the loss of medicinal plant species (Deesawadi, 2024). This study, therefore, aims to identify effective strategies for communicating essential plant narratives, thereby helping to increase public awareness of the significance of herbal plants.

3. RESEARCH OBJECTIVES

The three objectives of this project are organised according to the research process, not by priority:

1. To explore strategies for conveying herbal knowledge through art and design.
2. To investigate storytelling methods that communicate the unique characteristics and benefits of herbs.
3. To experiment with creative works that foster awareness of the reciprocal relationship between humans and plants.

Beyond examining storytelling techniques relating to plant cycles and therapeutic benefits, this study serves as a vital medium for conserving and disseminating botanical knowledge. In particular, applying the biophilia concept to creative works allows this research to be integrated with related disciplines. In Thailand, research and data collection on the significance of the biophilia concept remain limited (Nartkosar et al., 2023). Therefore, this study disseminates the idea by displaying creative works that may inspire further development of innovative designs and future research. Ultimately, the potential impact of this research on botany, art, and environmental design is substantial, paving the way for interdisciplinary perspectives and novel creative approaches.

4. RESEARCH METHODOLOGY

Qualitative methodology was employed in this study to examine the research outcomes and impacts, utilising in-depth interviews with key informants, observational methods, and experimental practice-based work. The research scope and creative process were structured as follows:

4.1 Research scope

1. Content

Specific herbal plant varieties were identified through interviews and surveys, while Thai botanical data was examined to facilitate storytelling via art and design.

2. Area

Field surveys were conducted to collect visual data for creative development at two primary locations in Chaiyaphum Province: Phu Peng Forest (Wang Na Tang Village, Nong Bua Daeng Subdistrict) and National Park and Community Forest (Nong Nok Khao Village, Na Fai Subdistrict).

3. Art and design creation

Three creative works were selected for exhibition at the Bangkok Art and Culture Centre (BACC) from 9–30 September 2023. The unique herbal diversity and local wisdom of Chaiphum were investigated, particularly in collaboration with the community enterprises of Wat Daoruang and Wat Si Chomphu. These locations provided rich narratives, legends, and forest-based origins essential for creative research.

4.2 Creative thinking process

A five-step creative-process model was utilised, adapted from Graham Wallas's foundational four-stage framework originally presented in *The Art of Thought* (Wallas, 1926). Following the synthesis by Reisman (2021), these four stages—Preparation, Incubation, Illumination, and Verification—were expanded to include a fifth stage—Reflection. This added stage allowed for structured evaluation, feedback integration, and iterative refinement. The alignment between this creative process and the research data sources is presented in Table 1.

Table 1: Creative process and corresponding data sources

Graham Wallas's creative process (adapted)	Data sources
1) Preparation Surveying, collecting data, and analysing plant communication strategies.	1) Secondary data from literature and academic documents.
2) Incubation Synthesising and analysing creative concepts for art and design.	2) Secondary and primary data from global creative exhibitions (online/offline).
3) Illumination Designing various concepts and strategic frameworks.	3) Primary data from fieldwork: photography and in-depth interviews with key informants.
4) Verification (evaluation) Selecting and testing appropriate strategies and creative formats.	4) Experimental design and prototyping to collect preliminary research results.
5) Reflection (final result) Presenting creative works in situ to measure impact and public engagement.	5) Field observations and audience feedback from the exhibition.

4.3 Fieldwork procedure

- Botanical data were collected from two primary perspectives:
 - Studying plant species essential to human existence and the environment.
 - Studying mechanisms of integrating plant narratives into art and design.
- Herbal plants were selected for storytelling based on the survey results, which indicated significant public interest in botany, with medicinal herbs being the most compelling category.
- The areas were surveyed and related research reviewed to identify the most suitable case study location.
- Specific plant narratives were curated for the creation of artwork and design projects. The criteria for selecting these included:
 - Plants with local identity
 - Presence of legends or stories relevant to human life and the environment
 - A morphological structure capable of conveying narratives through visual form.
- These herbal narratives were then presented through artistic and design works, followed by a testing/evaluation phase.

5. LITERATURE AND RELATED THEORIES: STORYTELLING OF HERBS

Why plants? The Plant Kingdom (Kingdom Plantae) is one of the largest groups of living organisms. In botany, taxonomy classifies plants based on their distinct shapes and morphologies. Aristotle and Theophrastus document plant and animal samples in *Historia Plantarum*, examining plant-animal interactions, including toxicity (Thanos, 1994). Some plants, such as Hellebore, contain potentially fatal toxins. Moreover, interest in botany surged during the Renaissance, with the revival of science, ultimately making *Historia Plantarum* highly influential (Thanos, 1994). As botanical texts spread, plants began to be represented in art, highlighting their beauty and the human-nature relationship. The Renaissance period also saw the introduction of innovative technologies, including printing. Notable advancements in botanical printing occurred in Germany, exemplified by *Herbarum Vivae Eicones* (Living Pictures of Plants). Printed in Strasbourg by Johann Schott in 1530, it is recognised as the first 'modern' illustrated herbal book (North, 2015). Furthermore, Leonhart Fuchs, regarded as the German Father of Botany, demonstrates a profound interest in medicinal plants by establishing a dedicated herb garden and producing his book, *De Historia Stirpium* (On the Study of

Plants) in 1542. Published by Michael Isengrin, this work features 512 woodcuts, documenting over 400 indigenous German species and 100 foreign plants (North, 2015). Later, in the Victorian era, art often used plants as symbols to convey meanings shaped by cultural interpretation. Since then, the representation of plants in art and design has gradually evolved and increased in significance.

5.1 Storytelling of herbs

Traditional records on the transmission of herbal narratives and properties primarily focus on data collection rather than artistic aesthetics. Despite Art Nouveau being deeply inspired by botanical forms—connecting art, science, and design—certain limitations remain in bridging the human-herb relationship. Schnaubelt (2011) also argues that the concept of Art Nouveau opened new perspectives on the use of intricate plant patterns in art and design, which later influenced movements like the German *Neue Sachlichkeit* (New Objectivity). However, the concepts of herbs and humans have historically remained conceptually divided: one relegated to the medical field and the other to the arts. Schnaubelt (2011) further connects this observation to the work of Karl Blossfeldt, a German artist who accurately portrays plant structures through botanical photography. By applying aesthetic principles to scientific observation, Blossfeldt's use of macro-photography allows viewers to engage with the plant's surface, thereby bridging the divide between artistic form and botanical detail. This study uses various artworks and designs to understand how plant shapes and characteristics can be conveyed to foster a human connection with nature. How does the perception of these botanical characteristics relate to human experience? How does this process function in artistic terms? This phenomenal interaction between human perception and plants operates through the brain. The 'memory of nature' stored within one's neural pathways can trigger an immediate emotional resonance. By the middle of the twentieth century, German naturalists began to recognise the existence of nature more profoundly. One of these was a German psychologist, Erich Fromm, who sought to scientifically study the connection between nature and the human spirit, known as 'biophilia'.

5.2 Biophilia concept

According to Erich Fromm, biophilia is a passionate love of life and of all that is alive, reflecting a desire for further growth in people, plants, ideas, or social groups (Fromm, 1973). While Fromm defines biophilia as a psychological relationship with the natural environment, Edward O. Wilson (1984) later applies this to spatial design, especially those related to the ecological system. Wilson's perspective is particularly significant, since he argues that human-created environments focus purely on a survival experience, frequently neglecting the deeper ecological connection. Wilson suggests that identifying a suitable habitat is the foundational step in an ecosystem; when the brain's complex structures are exposed to such surroundings, they respond naturally to the attributes of sounds, images, and smells (Wilson, 1984).

5.3 Biophilic design and well-being

Biophilic design is a concept through which designers, particularly in architecture, create mechanisms that connect humans and the environment, providing meaning through both 'direct' and 'indirect' experiences.

Stephen R. Kellert, a professor at the Yale School of Forestry and Environmental Studies and a pioneer in social ecology, uses the biophilic design concept to describe the fundamental relationship between humans and nature (Kellert et al., 2008). He also translates the biophilia hypothesis into a deliberate integration of natural systems within the built environment. In their later work, Kellert and Calabrese (2015) cite Ulrich's (1984) landmark research on hospital environmental design, which demonstrates that emphasising natural connections helps patients and service users reduce stress and anxiety. These findings also indicate that Americans and Europeans respond to nature with significant aesthetic and emotional appeal. Specifically, studies measuring satisfaction with hospital room decorations reveal a distinct preference for nature-based imagery over urban scenes. These results suggest that the presence of plants and water induces positive emotions; notably, water features can mitigate fear, sustain attention, and block stressful thoughts. Ulrich's (1984) evidence-based design results indicate that patients with access to windows and natural views experience improved treatment outcomes. Consequently, Kellert and Calabrese (2015) conclude that biophilic design provides substantial benefits for enhancing human performance.

5.4 Biophilic design framework: Approaches and elements

Kellert suggests that the concept of biophilic design should transcend the mere imitation of natural forms. He argues that simply replicating what the eye sees is often insufficient; while utilising natural light and space is beneficial, designers can achieve a deeper impact by integrating elements—such as light in sculpture—in ways that fundamentally connect a place with nature. To operationalise this concept, Kellert provides specific guidelines for designers (Kellert & Calabrese, 2015), identifying two primary design approaches:

- Organic or Naturalistic Experience: This approach involves using shapes and forms that reflect the intrinsic connection between nature and humans, even when they are not direct representations of natural objects.

- Place-Based or Vernacular Experience: This approach focuses on connecting a building's landscape with local culture and ecology, often through the use of indigenous materials and regional architectural styles.

Therefore, this design approach is linked to the following six elements of biophilic design (Kellert et al., 2008):

1. Environmental features

This element involves integrating natural characteristics into the built environment to evoke a direct connection to nature. Examples include the use of live plants, animals, and natural materials. Elements such as colour, water, and sunlight—alongside well-ventilated spaces—enhance well-being. Architects often manifest this through tangible features, such as ivy-covered walls, to bring nature directly into the structure.

2. Natural shapes and forms

This involves the representation and simulation of the natural world within architectural and artistic design. It encompasses patterns found in flora (trees and leaves) and fauna, as well as the transformation of organic features into stylised geometric or symbolic forms.

3. Natural patterns and processes

This element focuses on incorporating natural properties that connect with one's senses, such as the dynamic movement of light or sound, rather than just static shapes.

4. Light and space

The use of light and space is key to biophilic design. It provides value by creating a sense of openness and harmony, defining the relationship between indoor and outdoor environments.

5. Place-based relationships

This component addresses the cultural and ecological ties to a specific location. By using local materials and history, designers foster an emotional bond that encourages users to feel protective of the space.

6. Evolved human-nature relationships

This focuses on fundamental aspects of the human relationship with nature, reflecting innate biological and psychological inclinations, such as the need for security and exploration, within the built environment.

The biophilic design elements are integrated with broader principles and patterns within architectural practice (Roös et al., 2016). This holistic application ensures that the built environment fosters a meaningful and functional connection between humans and the natural world.

Table 2: Principles and patterns of biophilic design. Adapted from 'Biophilic inspired railway stations: The new frontier for future cities' (Roös et al., 2016)

Biophilic design principles	Patterns of biophilic design		
	Nature in the space	Natural analogues	Nature of the space
Design narratives	Visual connection with nature	Biomorphic forms & patterns	Prospect
	Non-visual connection with nature	Material connection with nature	Refuge
	Non-rhythmic sensory stimuli	Complexity & order	Mystery
	Thermal & airflow variability		Risk & peril
	Presence of water		
	Dynamic & diffuse light		
	Connection with natural systems		

Based on the principles and patterns of biophilic design shown in Table 2, equal importance is given to design patterns and Narrative Design (content design), which are categorised into the following formats:

Nature in the Space:

This category focuses on creating direct contact with nature. Narrative design in this format allows users to experience natural elements or imagery that stimulates the senses, fostering a direct connection with natural systems.

Natural Analogues:

Involves creating elements that represent nature through human interpretation. This includes the use of textures and materials that resemble natural surfaces, such as textiles or bark-like patterns.

Nature of the Space:

This category involves creating a sense of 'nature in the area' by shaping the spatial and physical characteristics of the environment. The design of buildings utilising bio-forms establishes a connection with

nature both directly and indirectly, influencing how users perceive and navigate the space. To further illustrate these connections, Table 3 presents the specific biophilic design characteristics aligning with the biophilia concept. As identified by Kellert et al. (2008), these attributes of biophilic design are categorised into the following 24 distinct types:

Table 3: Biophilic design characteristics
Source: Kellert and Calabrese (2015)

Direct experience of nature	Indirect experience of nature	Experience of space and place
Light	Images of nature	Prospect and refuge
Air	Natural materials	Organised complexity
Water	Natural colours	Integration of parts into wholes
Animals	Naturalistic shapes and forms	Transitional spaces
Weather	Simulating natural light and air	Mobility and wayfinding
Natural landscape/Eco system	Information richness	Cultural and ecological-attachment to place
Fire	Evoking nature, age, change, and the patina of time	Indirect experience of nature
	Natural geometries	Experience of space and place
	Biomimicry	

6. RESULTS

6.1 Field survey

A field survey was conducted in collaboration with local herbal experts, the abbot of Wat Daoruang, and the Wat Daoruang Community Enterprise in Chaiyaphum Province. Primary data collection took place in Phu Peng Forest (Wang Na Tang Village), as well as within national parks and community forests in the region. Due to the density and natural complexity of these environments, local guides were essential for navigation and plant identification. The results revealed a high level of biodiversity, characterised by a fertile ecosystem of indigenous Southeast Asian flora.

During the exploration, plant characteristics were documented through photography and the collection of herbarium specimens. Beyond technical data, the field experience highlighted the profound interconnectivity of living organisms—plants, animals, and humans. This immersive process facilitated a direct experience of biophilia, where the transfer of natural experiences becomes central to human-nature connectivity.

Based on field observations and semi-structured interviews with Thai traditional medicine practitioners and local herbal experts, specific herbs from the national park and community forest areas were selected for the creative storytelling phase.

A key finding was the unique ecological context of the Petrified Forests found in these locations. Utilising herbal species from these restricted and often inaccessible forest areas for creative production served not only as a narrative tool but also a strategy for the conservation of natural herbal resources, effectively bringing ‘unseen’ nature into the public consciousness.

6.2 Creative work entitled ‘Commingle’

Among the medicinal plants identified, the ‘Pat Hin’ (*Gardenia saxatilis* Geddes) tree from the stone forest area was selected as the primary subject for the creative output, based on its resonance with biophilic design principles, and categorised into three key dimensions:

1. Ecological uniqueness and locality: Pat Hin is an indigenous species that thrives specifically in the sandstone crevices of Chaiyaphum Province’s ‘Stone Forest’. Its ability to flourish in such a rugged environment serves as a powerful symbol of nature’s resilience.

2. Narrative and ethnobotanical value: Rich oral histories were gathered from local scholars and traditional herbalists. A significant legend involves the use of Pat Hin to detect and neutralise toxins in water and the human body—a narrative that bridges the gap between folklore and functional medicinal properties.

3. Morphological storytelling: The physical characteristics of Pat Hin inherently convey a narrative of ‘energy transfer’. Growing from ancient rock formations, the plant features sharp protective thorns contrasted by delicate, jasmine-scented blossoms.

4. Botanical profile and symbolism: Pat Hin, a member of the Rubiaceae family (Figure 1), is a rare shrub typically standing 1–2 metres tall with a distinctively stunted, contorted trunk—a morphology shaped by its rocky habitat. The solitary white flowers feature six overlapping petals arranged in a pinwheel configuration, while its round green fruit shares a botanical category with coffee. Found across Northeastern Thailand, Laos, and Cambodia, this species is documented by the Plant Genetic Conservation Project under the

Royal Initiative of Her Royal Highness Princess Maha Chakri Sirindhorn (n.d.). Its survival in dry dipterocarp forests across sandstone slopes makes it a profound subject for exploring the biophilic connection between harsh landscapes and human well-being.



Figure 1: Pat Hin (*Gardenia saxatilis* Geddes)

Source: The author

6.3 Storytelling design with the biophilic concept

The primary objective of this phase was to translate the medicinal significance of the selected species, Pat Hin, into a creative narrative. The storytelling focuses on its pharmacological property of detoxification. Insights gained from field interviews revealed the compelling local application of this plant as a natural bio-indicator:

'When navigating the forest, practitioners use a branch of Pat Hin to detect toxins in water or wild mushrooms; a visual change in the branch serves as a warning of toxicity' (Participant A, Thai traditional medicine doctor, personal communication, December 24, 2022).

From this ethnobotanical legend, a design narrative grounded in biophilic principles was developed. By integrating this theme, creative works can foster a deeper connection not only with the plant itself but also with its unique natural surroundings, ultimately promoting a sense of health, well-being, and a holistic environmental connection.

6.4 Storytelling strategies and design process

The biophilic design approach allows the significance of the Thai herbal plant Pat Hin to be present, not merely as an isolated subject, but as an integral part of its holistic natural habitat. Interviews with local Thai traditional medicine practitioners reveal that studying Ayurveda is an important foundation of Thai traditional medicine. Therefore, the biophilic and Ayurvedic frameworks were selected for this study, providing both the theoretical foundation and methodological guidance to represent Pat Hin and its surrounding forest environment. The patterns and principles of biophilic design were used to emphasise direct and indirect connections to nature, shifting the focus from mere plant forms to environmental features, such as light and atmospheric sensory engagement. Simultaneously, the Ayurvedic concept—specifically, the earth element (Prithvi) and Pat Hin's relationship to stones—directly influenced both the choice of materials and symbolism in the artistic process. For example, the earth element was symbolised through imagery and texture evoking rock formations, while the medicinal qualities of Pat Hin inspired the integration of narrative motifs associated with healing and purification within the entire forest ecosystem. Guided by these theories, the storytelling strategy consciously employs symbolism to interpret the relationship between Pat Hin, its medicinal properties, and natural surroundings, creating images that reflect the restorative energy of the environment and fostering a multi-sensory connection with viewers. This process of aligning theory and method ensures that the chosen symbols and media—whether visual forms, material selections, or sensory enhancements—are rooted in the conceptual frameworks described above.

To initiate the creative process, several production methods were evaluated, with two primary techniques identified as being the most effective for capturing this atmospheric essence:

1. Digital Fabric Printing: This method was employed to transfer selected photographs of both the Pat Hin plants and their surrounding forest landscapes from the national park and community forests of Chaiyaphum Province onto various fabrics. This established a strong research-and-development (R&D)

identity for the creative work, providing a more innovative and aesthetically engaging presentation than traditional media.

2. Layered Transparencies: Transparent fabrics were layered to create depth and atmospheric blur (Figure 2), seeking to reconstruct the multi-dimensional feeling of the forest.

In the final composition, these visual elements were rearranged—reducing realism and generating new forms aligning with deconstructivist principles—to allow viewers to experience the ‘essence’ of the habitat and its medicinal narrative (Figure 2).



Figure 2: Left, digital printing on transparent fabrics. Right, a flame image combined with a branch of the Pat Hin
Source: The author

Ayurvedic Approach

The human body and mind are governed by fundamental energies known as Doshas (Frawley, 2000), and categorised into three primary types (Tridosha). Each Dosha is characterised by a unique combination of two primary elements that define its biological and psychological qualities. In this creative output, a symbolic connection is established between these elements and specific natural forms: Earth (represented by stone and rock formations), Water (conveyed through aquatic and floral elements), and Fire (manifested through the symbolism of flame and light).

Biophilic Design Application

Biophilic design principles (Table 4) are incorporated to facilitate both direct and indirect nature experiences.

Table 4: Application of biophilic design principles within the creative process

Direct nature experience	Indirect nature experience
The scent comes from incense, a herb that smells like burning wood (Frankincense). (Figure 3)	Images of nature Photographs of flames, flowers, sky, and water Natural materials Pine and incense frames Natural colours Warm tones similar to the colours in the forest are used Naturalistic shapes and forms Fabric is used to create complex images from natural shapes Simulating natural light and air LED lights are used to stimulate the senses of the audience Biomimicry Photography is used to imitate the biology of plants

These concepts were translated into a mixed-media exhibition entitled ‘Commingled’, curated for the *Thailand Art & Design Exhibition 2023 (TADE)* at the BACC (Thailand Art & Design Exhibition, 2023). The presentation consisted of three distinct mixed-media works—integrating botanical imagery, sensory media, and optical illusions—arranged in a two-row configuration:

Row 1: Two images presented in a sequence (Figure 3)

Row 2: A single, focal image (Figure 4)

This spatial arrangement reflects the biophilic concept of complexity and order, mirroring the molecular structure of herbs and the Ayurvedic balance of elements: earth, water, wind, fire, and air (Figure 5).

Specifically, the inclusion of purple floral elements (Figure 4) serves as a visual metaphor for the detoxification process associated with Pat Hin, echoing the local legend of the plant's reaction to toxins.

To further enhance the multi-sensory engagement, a light-coloured pine frame was utilised to emphasise a natural aesthetic, while the introduction of Frankincense provided an olfactory dimension (Figure 3), grounding the viewers in a natural aroma. Finally, the integration of LED lighting (Figure 4) was employed not only for visual impact but also to represent the dynamic energy of nature, aligning with the biophilic goal of enhancing audience engagement through sensory stimuli.



Figure 3: Eco-friendly incense in wooden frames to create a fragrant smell
Source: The author



Figure 4: Left, biomimetic optical effects. Right, dimensional effects with LED lighting
Source: The author



Figure 5: Images arranged in a row
Source: The author

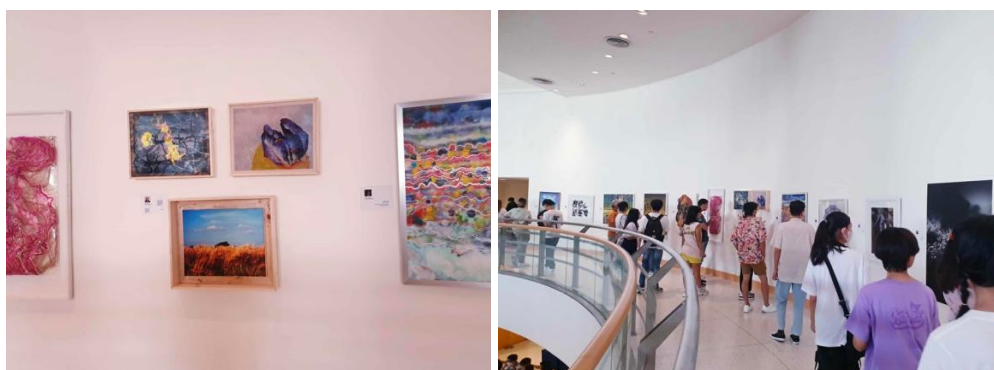


Figure 6: Atmosphere and audience engagement during the opening day of the exhibition
Source: The author

6.5 The Exhibition

Members of the audience were observed to frequently pause to examine the intricate techniques and layered textures of the exhibition (Figure 6). Professional feedback from artists and designers further validated the work, noting that the visual narrative successfully conveyed the beauty and medicinal properties of herbs through a highly innovative aesthetic approach.

To offer a multi-dimensional experience, a digital storytelling layer via a QR code linked to a documentary video (1:43 minutes) was incorporated. During the exhibition's opening day alone, 151 views were recorded. Although this study is primarily qualitative, such digital interaction data serves as a supplementary indicator to illustrate audience immersion:

Initial Engagement: 36% of viewers engaged with the opening conceptual narrative (the first 30 seconds).

Sustained Attention: A notable 21.5% of viewers watched the video to its conclusion (1:43 minutes).

In the context of a high-stimulus environment like an exhibition opening, these engagement patterns are significant. The act of scanning a QR code requires deliberate intent; consequently, a completion rate of over 21% illustrates the narrative's capacity to transcend mere visual attraction and achieve deep conceptual resonance. This qualitative evidence confirms that the 'Commingle'd' concept successfully engaged the public.

Furthermore, the impact of the research extended beyond the gallery space. The author was invited to serve as a guest speaker at an academic seminar to discuss the environmental crisis from the perspective of art and design. This opportunity served to raise public awareness regarding the vital interplay between nature and humanity, further fulfilling the biophilic objectives of the project.

7. DISCUSSION

This article presents findings from the Storytelling of Herbs (and Us) research project, which examines strategies for communicating herbal knowledge through the lens of art and design. By synthesising relevant literature and theories, this study establishes a narrative strategy grounded in biophilic design principles. The methodology involves experimental art and design production, leading to the following key conclusions:

7.1 Methods for conveying herbal knowledge through art and design

The synthesis of literature and theoretical frameworks reveals that while most existing art and design works utilise plants as models, they often rely on reductive symbolic representations that fail to convey the functional essence of herbs. Historically, Thai herbal knowledge has been presented through medical illustrations (Medical Arts), which prioritise technical information but often lack aesthetic engagement. Consequently, this study suggests that selecting effective methods for conveying herbal knowledge requires a conceptual framework that harmoniously integrates scientific accuracy with artistic aesthetics.

7.2 Communication strategies for herbal plants and their benefits through storytelling

This study reveals a significant gap in storytelling-based communication within herbal art and design. While traditional herbalism provides a historical foundation, this research identifies Kellert's biophilic design as a primary strategy for bridging the connection between nature and humans. Furthermore, Ayurvedic studies are integrated into the narrative—not as a weakening element, but as a unique strength that elevates the artistic communication of medicinal properties. This combined strategy allows for an aesthetic and culturally rich storytelling approach that resonates more deeply with the audience.

7.3 Raising awareness of the relationship between humans and plants

Through public exhibitions and seminars exploring the intersection of design, nature, and human existence, this study demonstrates the importance of environmental stewardship and its direct impact on human well-being. These activities demonstrate that biophilic storytelling can successfully raise public awareness of the interdependence of humans and plants. Based on the findings, the specific outputs and outcomes of this research, mapped against the initial objectives, are detailed in Table 5.

Table 5: Alignment of research objectives with key outputs and outcomes

Objectives	Outputs	Outcomes
1) To explore strategies for conveying herbal knowledge through art and design	Research paper Creative works	Presenting medicinal plants and disseminating them through exhibitions, attracting over 500 visitors.
2) To investigate storytelling methods that communicate the unique characteristics and benefits of herbs	Research paper Creative works	Successfully communicating the unique characteristics and benefits of herbal plants using an aesthetic storytelling approach based on biophilic design principles.
3) To experiment with creative works that foster awareness of the reciprocal relationship between humans and plants	Creative works Seminar	A prototype emerged for fostering awareness and appreciation of the importance of conserving natural resources.

The following prototype was also created to communicate Thai herbal plants and their benefits through storytelling based on the concept of biophilic design.



Figure 7: A prototype for biophilic experience in herbal communication

As illustrated in Figure 7, the prototype comprises three interconnected core dimensions, designed to function in a balanced synergy:

Dimension 1: Understanding (The Foundation of Knowledge)

Practitioners must establish a profound understanding of herbal subjects through field research and site-based exploration, observing plant morphology within its natural habitat.

Dimension 2: Emphasis (The Biophilic Translation)

This stage involves translating technical medicinal data into visual and tactile elements. Using biophilic principles, scientific information is transformed into organic forms, natural textures, and evocative patterns.

Dimension 3: Communication (The Creative Engagement)

The final phase focuses on the effective dissemination of synthesised data. By selecting appropriate media and artistic techniques, the practitioner creates a sensory experience that not only informs the audience but also evokes an emotional response, fostering a deeper connection between humans and nature.

The model suggests that the Audience Experience—particularly within the context of medical art and herbal communication—is most effective at the convergence of these elements. A balanced integration ensures that scientific accuracy (Understanding) and biophilic translation (Emphasis) are successfully conveyed through creative media (Communication), resulting in a meaningful and aesthetically harmonious engagement for the viewer.

8. CONCLUSION

Biophilic design engages both psychological and physiological dimensions, requiring a rigorous and well-defined approach to research measurement. The application of biophilic design is inherently profound and nuanced, requiring a research approach that captures the intricacies of human perception. This study demonstrates that biophilic connections cannot be fully understood through isolated statistical values; instead, qualitative insights—gathered through narratives and subjective experiences—provide the essential depth needed to interpret the bond between nature and humans. Consequently, the results of this creative research emphasise that the efficacy of biophilic interventions rests on qualitative dimensions that quantitative variables often overlook. For future research, it is suggested that a mixed-methods framework be adopted to complement these qualitative foundations. This would involve developing evaluation strategies that foster a synergy between qualitative and quantitative data, utilising quantitative metrics to reinforce qualitative findings. Within this framework, deep insights from participant diaries or sensory mapping (as pioneered in this study) can be integrated with empirical measurements, such as Indoor Environmental Quality (IEQ) metrics. As explored by Asojo and Hazazi (2025) at the Bell Museum, biophilic strategy integration significantly affects IEQ, occupant satisfaction, and health. By refining such robust, multi-dimensional systems, future practitioners can ensure that biophilic design achieves meaningful, verifiable, and stable results in enhancing human performance.

DECLARATION

1. Conflict of interest

The author declares that there are no financial or personal relationships with other people or organizations that could inappropriately influence or bias the content of this work.

2. Generative AI and AI-assisted technologies in the writing process

During the preparation of this manuscript, the author used AI-assisted technologies solely for the purpose of refining language, improving grammatical accuracy, and enhancing the flow of the prose. These tools were not used to conduct research, collect data, or generate original scientific/artistic insights. All final interpretations, research findings, and conclusions were independently formulated and verified by the author.

3. Data availability statement

The qualitative data and images of the creative works supporting the findings of this study are included within the article. Additional information regarding the biophilic design framework and botanical data is available from the author upon reasonable request.

4. Ethics statement

The author declares that this research focuses on the visual analysis of Thai herbal plants and the application of biophilic design principles through artistic creation. The study does not involve human, animal subjects, or clinical trials; furthermore, it does not collect sensitive personal data or involve restricted biological resources. A key methodological component involved the critical analysis of plant-related literature and narratives, through which inherent biophilic storytelling strategies were identified and synthesised. These findings, combined with morphological exploration and informal observational field studies, inform the creative design process. All traditional ecological knowledge was derived from publicly available sources to uphold privacy and academic integrity.

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6. Contributor Role Taxonomy (CRediT)

Nalinnath Deesawadi: Conceptualisation, Methodology, Investigation (Field survey), Formal analysis, Visualisation (Creative production), Funding acquisition, Writing – original draft, Writing – review & editing.

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