



ALTERNATIVE MODEL OF SEATING: THE DEVELOPMENT OF SEATING FROM SIAM SEAT



By

MISS Rutairat PRAYOONHONG

A Thesis Submitted in Partial Fulfillment of the Requirements
for Doctor of Philosophy Design Arts (International Program)

Silpakorn University

Academic Year 2024

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Siam Seating reflects Siam's traditional sitting practices and furniture design, embodying values of modesty, simplicity, and respect. Over 300 years ago, Simon de la Loubère, a French ambassador to Ayutthaya, observed these unique practices, raising questions about how Siamese sitting differs from other cultures and how these traditions endure. Common items such as Mats, Krae (bamboo litters), Tang, and Yaeng illustrate a lifestyle rooted in simplicity and a deep connection to nature. Despite the introduction of chairs, traditional sitting practices continue to shape Thai culture, influencing behavior, relaxation, and community life.

This research presents an alternative seating model inspired by Siam Seating, harmonizing traditional Thai principles with contemporary ergonomic standards and international design practices. The design integrates traditional aesthetics and minimalist elements with modern ergonomic features to enhance comfort and usability. Key features include adjustable dimensions to accommodate diverse body types and preferences, improved support through advanced materials, and versatile adaptability for both individual and communal settings.

Employing a comprehensive methodology that includes user studies, prototype testing, and comparative analysis with international standards, the research ensures the model's functionality and cultural relevance. The findings demonstrate that the new seating design successfully blends traditional Thai practices with contemporary demands, offering a culturally integrated solution that enhances user experience across various contexts.

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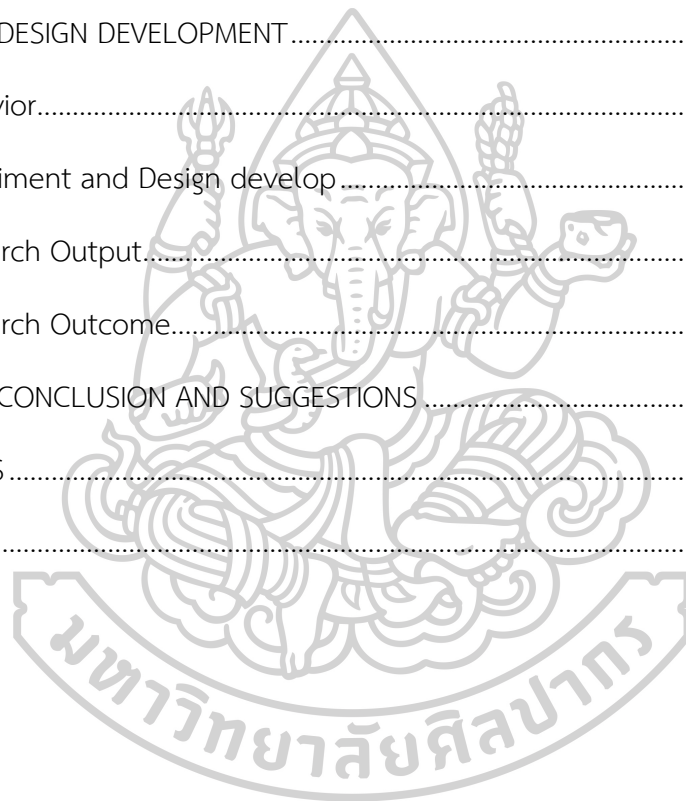
Finally, I wish to thank my family for their endless love and support. Their patience and belief in me have been my greatest source of strength. This thesis is the result of the collective support and guidance from all of you, and I am profoundly grateful for your contributions.

Rutairat PRAYOONHONG

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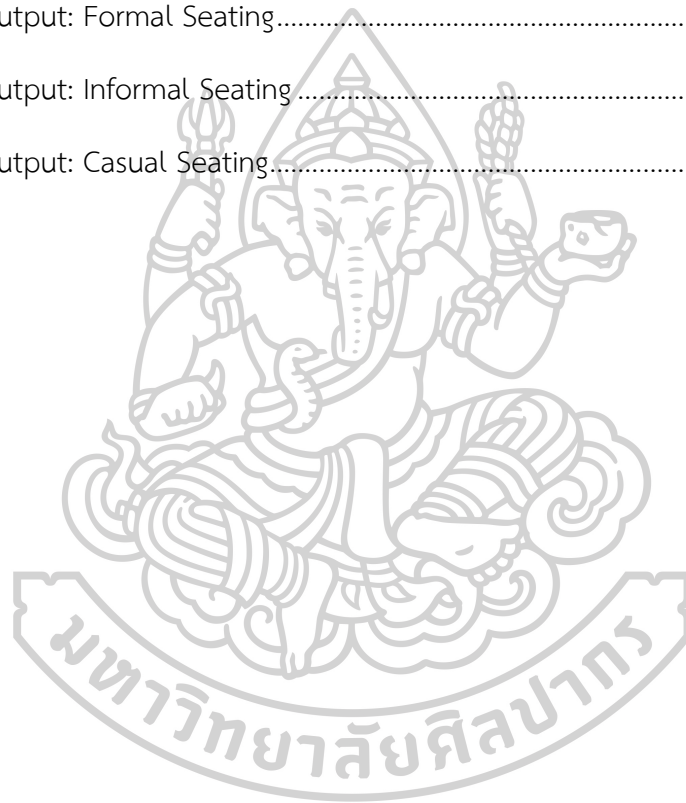
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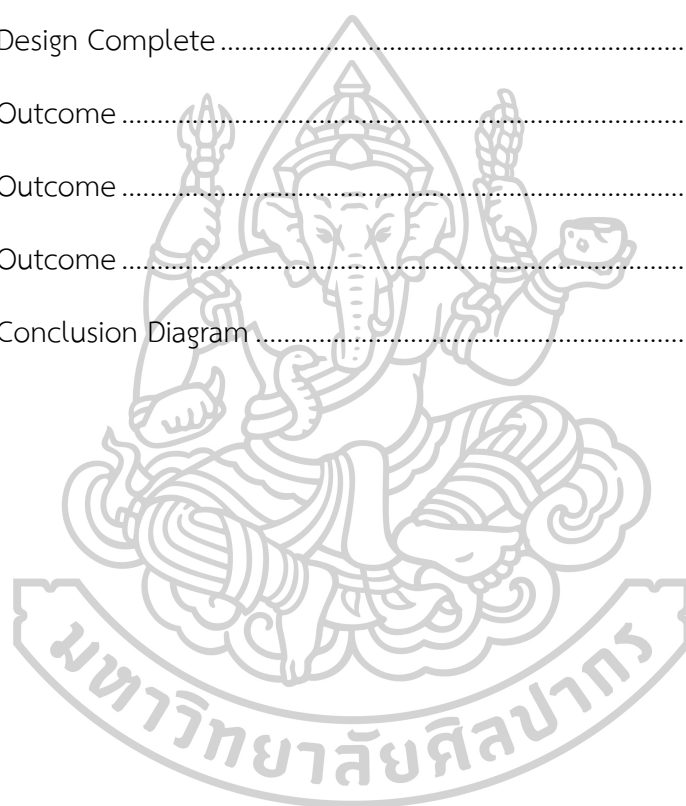
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CHAPTER 1

INTRODUCTION

This research focuses on the development of a new model for public seating that integrates the principles of Siam Seating, with the goal of enhancing comfort, usability, and cultural relevance in today's Thai society. By considering both the functional and cultural dimensions of seating design, the study aims to create public seating that not only meets modern ergonomic standards but also reflects and reinforces Thai cultural values and behaviors.

This chapter deals with the following sections:

- 1.1 Background and Significance of the Research
- 1.2 Problem Statements
- 1.3 Objectives
- 1.4 Research Hypothesis
- 1.5 Scope of the Research
- 1.6 Research Methodology
- 1.7 Research Process
- 1.8 Research Outcomes
- 1.9 Limitation of the Research
- 1.10 Research Results
- 1.11 The Relationship between Research Objectives (RO), Research Questions (RQ), Research Methodology (RM), Research Outcomes (ROC)

1.1 Background and Significance of the Research

Siam Seating is deeply rooted in the traditional seating style and furniture design of Siam. It reflects the culture, traditions, behaviors, postures, and values of modesty, simplicity, and respect that have been upheld in

Siamese society for generations. This seating tradition includes the use of floor mats, seat cushions, low platforms, stools, simple wooden benches, and wooden chairs, all of which embody a lifestyle that is closely connected to nature and prefer for simplicity. These traditional seating arrangements have not only influenced the physical posture of Thai people but have also played a crucial role in shaping social interactions, relaxation practices, and community life. Despite the growing influence of Western seating, which has introduced higher chairs and more structured seating options, the essence of Siamese seating is still present in Thai culture. As Thailand navigates the complexities of modernization and globalization, there is an urgent need for develop seating solutions that respect these traditional values while incorporating international design principles.

The importance of this research lies in the aim to create an innovative design for public seating that harmoniously combines the principles of Siam Seating with contemporary international standards. By focusing on the counter of the seat, a crucial aspect for both comfort and usability, this study seeks to meet the evolving needs of Thai society while maintaining a strong connection to cultural heritage. The new design combines the modesty and simplicity of traditional Thai seating with the ergonomic and aesthetic demands of modern international design. The result is seating that is both comfortable and culturally relevant. This approach not only enhances the user experience in public spaces, but also fosters a deeper appreciation of Thai cultural identity in a rapidly changing world. Furthermore, this research has the potential to influence global design practice by demonstrating how traditional and modern elements can be successfully combined to create seating solutions that are both functional and meaningful.

1.2 Problem Statements

Siam Seating, a key aspect of Thai cultural identity, reflects the traditional seating styles and furniture design that have been an integral part

of Thai society for generations. These practices embody the values of modesty, simplicity and a deep connection with nature, which can be seen in the use of floor mats, seat cushions, low platforms, and simple wooden furniture. In recent years, however, the prevalence of this traditional seating has declined significantly due to the influence of modern, western seating and the general effects of globalization. As contemporary furniture designs that emphasize height, structure and other ergonomic standards become more prevalent, the traditional forms of Siam Seating are gradually being overlooked and in some cases lost altogether. This change not only threatens the preservation of Thai cultural heritage, but also risks alienating the traditional behaviors, postures and social interactions that have long been associated with Siam Seating. The challenge is to find ways to preserve and revitalize these traditional seating practices in the context of a rapidly changing society.

Anna Pitsawong (2012). stated, that the adoption of Western culture and various inventions has significantly changed the Thai way of life. For example, Thais now use spoons and forks instead of their hands to eat, sit on chairs instead of the floor, wear Western or adapted Western clothes, build palaces and houses in Western style.

Traditional Siam seating and sitting practices are an integral part of Thai culture and lifestyle, reflecting behaviors and lifestyles that have been preserved over generations. ASSETOFFICEPRO (2012). mentions that in Thai households, armchairs are commonly found in living rooms, dining areas and outdoors. They are often used as seating for guests, as a place for family members or as a place to relax and unwind. The low, relaxed seating position of these armchairs reflects the Thai cultural values of hospitality and friendliness. Additionally, armchairs symbolize the Thai way of life and represent the warmth and comfort of a home.

However, the specificity of these traditions is fading due to changes in modern society. The adoption of foreign cultures has played a significant role

in this change and has led to less attention being paid to and preservation of traditional Thai seating. In addition, many Thais today are no longer accustomed to using traditional Thai seating as they find it uncomfortable and unfamiliar. This has led to a decline in popularity in daily life and poses a great challenge to integrate the uniqueness of Thai seating and sitting behavior into contemporary design.

The main problem is the lack of studies and research on Thai sitting behavior based on contemporary design. Research in this area remains inadequate, resulting in a lack of knowledge and understanding in designing seating furniture with proportions, sizes and functions that suit Thai lifestyles and physiques. This lack makes it difficult to effectively integrate traditional elements into modern seating designs.

Developing new seating that reflects the cultural diversity and behaviors of Thai people and provides comfort and flexibility to meet the needs of all users in both indoor and outdoor spaces. The design needed to ensure comfort and practicality in different environments, combining tradition and modernity in a universally appealing way. The result is a seating model that reflects Thailand's cultural identity while catering to a variety of users and balancing innovation and accessibility. Preserving these cultural practices in modern design reinforces Thai culture and behavior and creates a foundation for future design innovation.

1.3 Objectives

1.3.1 To Siam Seating furnitures, including mats, Thai bamboo litter, Tang stool - Tang bed and Yaeng seat in relation to various aspects such as furniture types, features, sizes, uses and user postures, and the correspondence of these features with Thai people's usage behavior.

1.3.2 To analyze Siam seating furniture, including mats, Thai bamboo throws, Tang stools, Tang beds, and Yaeng seats, in terms of various aspects such as furniture types, features, sizes, purposes, and user postures to meet

the needs that are consistent with the sitting behavior of Thai people and the context of the region.

1.3.3 To create a new experience of seating in outdoor, indoor space, and inspiration.

1.4 Research Hypothesis

The hypothesis of this research is that the integration of traditional Siam Seating elements with modern ergonomic and international design principles lead to a new seating model that:

1.4.1 Improve Comfort and Ease of Use: The new model improves user comfort and usability compared to traditional Siam Seating by incorporating modern ergonomic features, such as adjustable dimensions and advanced materials, while maintaining cultural aesthetics and low-profile design.

1.4.2 Maintains Cultural Relevance: The new seating model preserves and reflects traditional Thai cultural values of modesty, simplicity and closeness to nature. This ensures that the design remains culturally relevant and resonates with users familiar with Siam Seating.

1.4.3 Facilitates Wider Acceptance: The integration of international design principles with traditional Thai seating makes the new model more adaptable and acceptable in both local and global contexts. This will address the needs of diverse user groups and promote a greater appreciation of Thai cultural heritage.

1.4.4 Supports Versatile Use: The model proves its worth in various environments - public spaces, private homes, and communal areas—by combining traditional seating with modern functionality to meet the needs of different seating arrangements and user preferences.

This hypothesis is tested through a combination of user studies, prototype evaluations, and comparative analysis to assess the effectiveness of the new seating model in achieving these goals and meeting the evolving needs of today's users.

1.5 Scope of the Research

This research focuses on the development and evaluation of a new seating model that combines traditional Siam Seating principles with modern ergonomic and international design standards. The scope of the research includes the following areas:

1.5.1 Investigating the history of Siam Seating, including mats, Thai bamboo litters, Tang stools, Tang beds, and Yaeng seats, from various aspects such as furniture types, features, sizes, uses, and user postures. Additionally, examining the suitability of these functions for Thai people's usage behavior, focusing on ergonomics, human dimensions, and relevant case studies.

1.5.2 Investigating users using qualitative methods, design processes, and case studies.

1.5.3 Develop a design inspired by traditional elements and propose a design solution to create a new seating experience for indoor spaces.

The research utilizes a mixed-methods approach that includes qualitative analysis, user studies, and a comparative design evaluation, to comprehensively address these areas and ensure that the new seating model meets both cultural and functional objectives.

1.6 Research Methodology Diagram

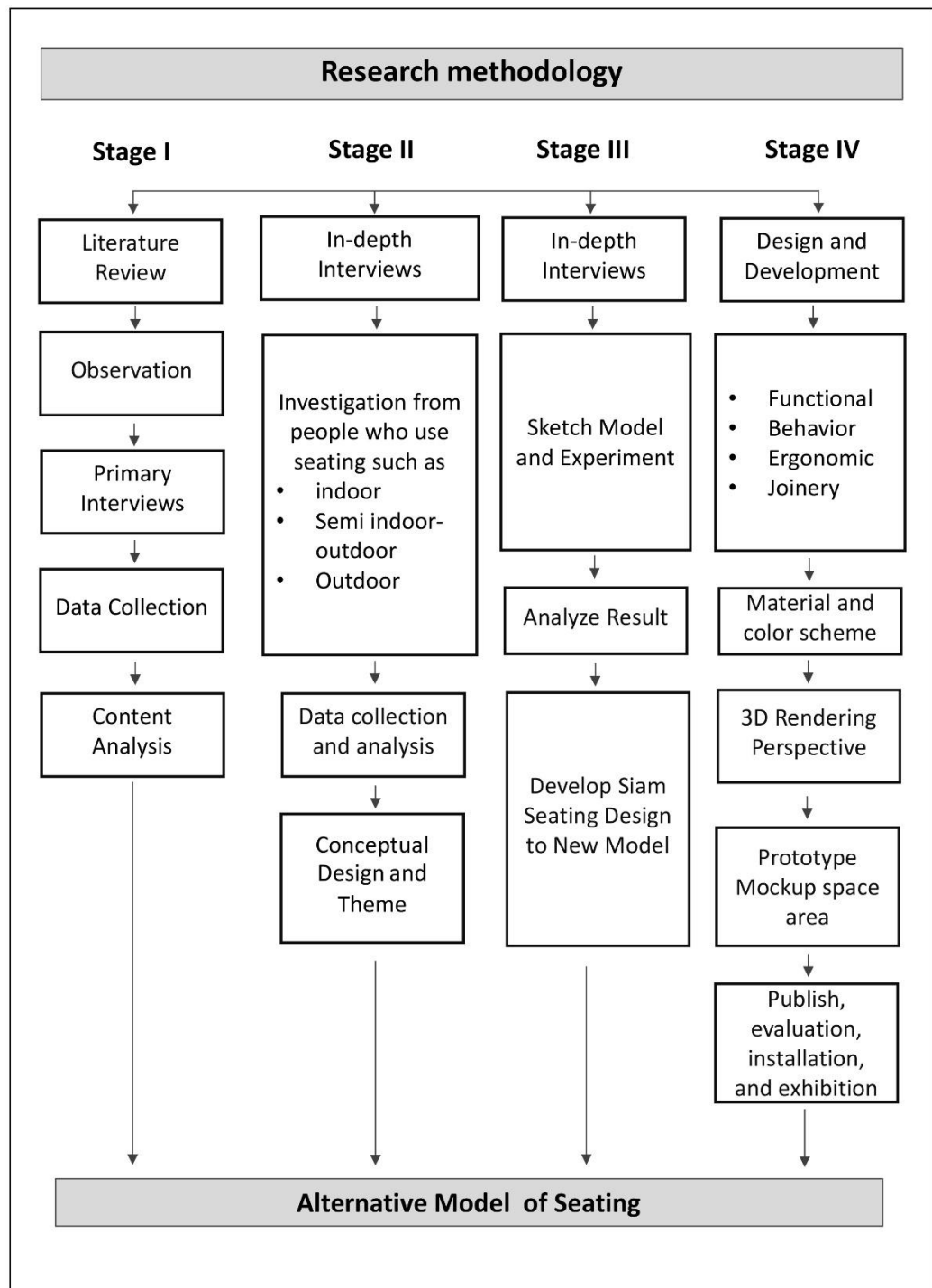


Figure 1 Research Methodology

Stages of Study

Step 1: Data Collection

Data were collected by reviewing literature from research studies, books, journals, articles, related documents from the internet, observation, and preliminary interviews. and content analysis

Step 2: In-depth Interview

Collect data (field) to investigate a sample population that uses public seating by conducting in-depth interviews, by conducting surveys and interviews, by creating questionnaires. Collect and analyze data to formulate ideas and conceptual models.

Step 3: Pre-print Testing

Process the data obtained to summarize and analyze it. and to try out and test assorted designs for public seating. with sketching 3D imaging small model making.

Stage 4: Design and Development

The result is a planned layout of design, function, material form and perspective 3D renderings, mock-up layouts for publication, evaluation, installation and exhibition.

Design Framework

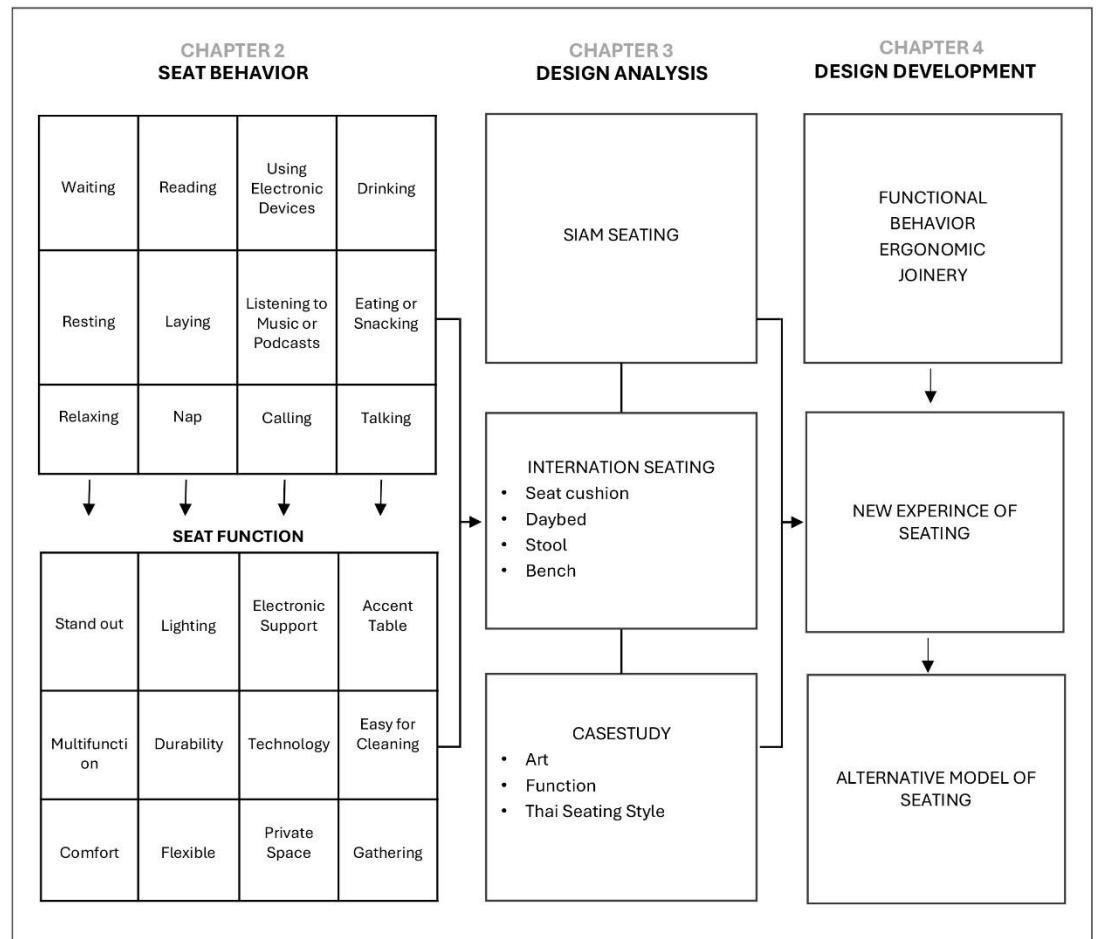


Figure 2 Design Framework

1.7 Research Process

The research process to develop a culturally and ergonomically appropriate model of public seating for Thai society involves a systematic and multidisciplinary approach. This process aims to ensure that the final seating model is both functional and culturally appropriate and meets the specific needs and preferences of Thai users.

The research process can be divided into the following key stages, maintaining cultural relevance, ensuring that the new seating model effectively preserves and reflects traditional Thai cultural values such as modesty, simplicity, relaxation and a connection to culturally significant elements. This approach resonates with users who are familiar with Siam Seating.

1.7.1 Review Literature: The research begins with an extensive review of existing literature on Thai seating practices, ergonomic design principles and public seating in urban environments. In this stage, traditional Thai seating is examined, including its historical context, cultural significance and evolution over time. Additionally, contemporary research on ergonomics, human behavior in public spaces, and cross-cultural design is examined to identify best practices and potential challenges.

1.7.2 Study Cultural Analysis to gain a deep understanding of Thai sitting behavior. This includes observation and documentation of sitting habits in various public and private settings, such as temples, houses, parks and urban spaces. Interviews and focus group discussions with different user groups, including older people, young adults and children, provide insights into their preferences, discomforts and cultural values in relation to sitting. The cultural analysis focuses on identifying the key elements of Thai seating that should be preserved in the new design, such as proximity to the floor, social interaction and respect for hierarchies.

1.7.3 User-Centered Design Approach based on the knowledge gained in the study, the research follows a user-centered design approach. In this stage, initial design concepts are created that incorporate both traditional Thai elements and modern ergonomic principles. Prototypes of these designs are developed and tested with a small group of users to obtain feedback on comfort, usability and cultural appropriateness. Iterative testing and

refinement are conducted to ensure that the design meets the needs of a wide range of users.

1.7.4 Collaboration with Local Artisans and Designers to incorporate traditional craftsmanship into the seating model, the research includes collaboration with local Thai artisans and designers. This stage explores the use of traditional materials, techniques and aesthetic elements in the design process. Workshops and collaborative sessions are organized to experiment with varied materials such as wood, bamboo and textiles to ensure that the final product is both durable and visually appealing while remaining true to Thai cultural heritage.

1.7.5 Ergonomic Testing and Evaluation: As soon as the final design has been finalized, the seating model is subjected to rigorous ergonomic testing. This involves testing the comfort, posture support and usability of the seating in various public environments such as parks, transport hubs and community centers. User feedback is gathered through surveys and interviews to evaluate the performance of the seating on various parameters, including physical comfort, ease of use and cultural fit.

1.7.6 Implementation and Field Testing: The next phase involves implementing the seating model in selected public spaces for a period of field testing. During this phase, the seating is monitored to observe how it is used by different demographic groups and in different contexts. Field observations, user feedback and usage patterns are analyzed to identify potential improvements or changes.

1.7.7 Final analysis and reporting The final stage of the research process involves analyzing the data collected during the field-testing phase. This analysis helps to determine the successes and limitations of the seating model, leading to final adjustments where necessary. The findings are then

be summarized in a comprehensive report containing design guidelines, recommendations for public space planners and suggestions for future research in the field of culturally sensitive seating design.

1.7.8 Dissemination of Findings: To ensure that the findings of this research reach a wide audience, the results are disseminated through academic publications, design conferences and workshops with urban planners, designers and policy makers. Additionally, exhibitions and presentations are organized to showcase the seating model and promote the importance of culturally informed design in public spaces.

1.8 Research Outcome

The development of the new seating model, which merges traditional Siam Seating with modern design principles, is anticipated to yield several significant benefits, both culturally and practically:

1.8.1 To obtain data regarding the behaviour of Thai people using Indoor / Outdoor seating. These outcomes will be applied to the second phase of data collection

1.8.2 To obtain data insights and identify potential issues related to furniture types, characteristics, sizes, uses, and user postures, as well as the suitability of these functions with the seating behaviour of Thai people. This information will be linked to Thai sitting postures, ergonomics, and human dimension scales, and will later be used to develop functional elements for a new seating model. The outcomes of this analysis will inform the third phase of data collection.

1.8.3 The outcomes from phase two. To value and validate the data through Thai social activities, services, and a set of new value-added designs.

Overall, the new model design of seating from Siam Seat is expected to have a profound impact on both Thai society and the broader design community. It offers a unique solution that honours tradition while embracing

the needs and preferences of contemporary users, ultimately contributing to the preservation of culture in a rapidly changing.

1.9 Limitation of the Research

While the development of the new seating model successfully integrates traditional Siam Seating elements with contemporary design principles, several limitations were identified in the research process:

1.9.1 Cultural Variability: The research primarily focuses on general aspects of Siam Seating, which may not fully capture the regional differences in traditional seating practices in various parts of Thailand. Therefore, the new model may not resonate equally with all Thai communities, which could limit its cultural relevance in certain areas.

1.9.2 User Adaptation: Despite efforts to combine traditional and modern features, some users accustomed to Western seating may find it difficult to adapt to the lower profile and posture required by the new model. This could limit the wide acceptance and use of the seating in modern urban environments where Western influences are strong.

1.9.3 Material Limitations: While the use of advanced materials to improve comfort and durability is necessary, it may lead to higher production costs. This may make the new seating model less accessible to lower income communities where traditional seating is still widely available and economically viable.

1.9.4 Preservation vs. Innovation: It was a great challenge to find a balance between the preservation of traditional design elements and the need for innovation. Some aspects of Siam Seating had to be modified to meet modern ergonomic standards, which could be perceived by purists as a compromise on cultural authenticity.

1.9.5 Scalability and Production: The production process for the new seating model, which involves both traditional artisanry and modern manufacturing techniques, may pose challenges in terms of scalability. Ensuring consistent quality while maintaining cultural integrity in mass production could pose difficulties for widespread adoption.

1.10 Research Results

Research has led to the development of a new seating model that seamlessly blends the traditional elements of Siam Seating with contemporary design principles, considering both cultural preservation and modern usability. The new model retains the low-to-the-ground design and minimalist esthetic that is characteristic of Siam Seating, reflecting the values of modesty, simplicity and respect inherent in Thai culture. However, it also incorporates ergonomic improvements that align with international standards, ensuring greater comfort and support for a wider range of users.

The key features of the new design are:

1.10.1 Adjustable Height: While maintaining the low-profile design of traditional Siam Seating, the new model offers height-adjustable options to suit different user preferences and contexts, bridging the gap between traditional and modern seating needs.

1.10.2 Enhanced Comfort: The seating surface has been crafted from advanced materials that offer greater comfort and durability, yet retain the tactile qualities of traditional Thai materials like woven textiles or natural fibers.

1.10.3 Cultural Embellishments: Incorporating subtle cultural motifs and patterns, the design pays homage to traditional Thai artistry while maintaining a sleek, modern look that is in tune with contemporary tastes.

1.10.4 Modular Design: The seating can be arranged in various configurations that support both individual and communal seating. They reflect the social nature of Thai seating while allowing for modern, flexible use in public and private spaces.

This new seating model successfully combines the essence of Siam Seating with global design trends to create a versatile product that honors Thai cultural heritage while meeting the needs of today's users. The research demonstrates that it is possible to preserve and revitalize traditional seating in a way that is both culturally meaningful and practical in modern settings.

1.11 The Relationship between Research Objectives (RO), Research Questions (RQ), Research Methodology (RM), Research Outcomes (ROC)

In the table, each row could show a specific RO with the corresponding RQs, the RM used to investigate these questions and the resulting ROC. This structure ensures a coherent flow from the original purpose of the research to the final outcomes and demonstrate how each component contributes to the overall study.

Table 1 The Relationship between Research Objectives (RO), Research Questions (RQ), Research Methodology (RM), Research Outcomes (ROC)

RELATIONSHIP BETWEEN TITLE, PROBLEM STATEMENTS (PS), RESEARCH OBJECTIVES (RO), RESEARCH QUESTIONS (RQ) AND RESEARCH METHODOLOGY (RM), RESEARCH OUTCOMES (ROC)

FRAMEWORKS OF TITLE		Subject of the Study / Research	Siam Seat			
		Setting:	Indoor / Semi Indoor-Outdoor / Outdoor Spaces			
		Variable of the Study / Research:	New Model of Seating			
TITLE		NEW MODEL OF SEATING: THE DEVELOPMENT OF SEATING FROM SIAM SEAT				
PROBLEM STATEMENTS (PS)		RESEARCH OBJECTIVES (RO)	RESEARCH QUESTIONS (RQ)	RESEARCH METHODOLOGY (RM)	RESEARCH OUTCOMES (ROC)	
1.	Traditional Siam seating and sitting practices are integral to Thai people's culture and way of life, reflecting behaviors and lifestyles that have persisted for generations. However, the distinctiveness of these traditions is fading due to changes in modern society. The adoption of foreign cultures has played a significant role in this shift, leading to a decline in the attention and preservation of traditional Thai seating practices. Additionally, many Thai people today are not accustomed	1. To examine Siam seating, including mats, Thai Bamboo litter, Taung Seat - Taung Bed, and Yaeng seat in various aspects such as furniture types, characteristics, sizes, uses, and user postures, as well as the suitability of these functions with the usage behavior of Thai people.	1. What is the importance of seating from Siam seating?	Literature Review, Fieldwork (survey, interview, and collection of documents) from a group of Thai people who use Indoor / Outdoor seating.	To obtain data regarding the behaviour of Thai people using Indoor / Outdoor seating. seating. These outcomes will be applied to the second phase of data collection	

	to using traditional Thai seating, finding it inconvenient and unfamiliar. This has led to a decline in its popularity in daily life, posing a significant challenge in integrating the uniqueness of Thai seating and sitting behavior into contemporary design.					
2.	The main problems of the significant problems is the lack of studies and research on Thai sitting behavior that aligns with contemporary design. Research in this area remains insufficient, resulting in a lack of knowledge and understanding in designing seating with proportions, sizes, and functions that suit the lifestyle and physique of Thai people. This deficiency creates challenges in effectively incorporating traditional elements into contemporary seating designs.	2.	To analyze Siam seating, including mats, Thai bamboo litters, Taung stools, and Yaeng seats, in various aspects such as furniture types, characteristics, sizes, uses, and user postures, in order to address the needs that align with the sitting behavior of Thai people and the context of the area.	2.	Why does Siam seating in relate to function design for Thai people's behavior?	<p>Case Study</p> <ul style="list-style-type: none"> -Selected a group of Thai people who use indoor / outdoor seating in difference areas. - Interview, observation and documents, and visual analysis. <p>To obtain data insights and identify potential issues related to furniture types, characteristics, sizes, uses, and user postures, as well as the suitability of these functions with the seating behavior of Thai people. This information will be linked to Thai sitting postures, ergonomics, and human dimension scales, and will later be used to develop functional elements for a new seating model. The outcomes of this analysis will inform the third phase of data collection.</p>

3.	<p>Developing new seating that reflects Thai cultural diversity and behaviors, offering convenience and flexibility to meet the needs of all users in both indoor and outdoor spaces. The design should ensure comfort and practicality across different environments, blending tradition with modernity in a universally appealing way. The outcome is to produce a seating model that captures Thai cultural identity while being adaptable to a wide range of users, balancing innovation with accessibility. Preserving these cultural practices in modern design strengthens Thailand's culture and behavior, setting a foundation for future design innovations.</p>	3.	<p>To create the new experience of seat in public space and inspiration</p>	3.	<p>How to develop a new model of Siam seating for Thai people by using a Thai posture surface?</p>	<p>A Focus group discussion with a checklist and set of questionnaires.</p>	<p>The outcomes from phase two. To value and validate the data through social activities, services, and a set of new value-added design.</p>
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CHAPTER 2

LITERATURE REVIEW

A literature review on the New Model of Seating: The Evolution of Seating by Siam Seat. The researcher focuses on the following studies.

2.1 History of Siam Seating

The history of Siamese seating is closely interwoven with the cultural and social development of Thailand, which was known as Siam until 1939. Traditional Siamese sitting reflects a simple way of life, as evidenced by paintings and old photographs. Historically, the Siamese preferred to sit on the floor, which was both comfortable and suited their minimalist lifestyle. Floor mats made from natural materials such as bamboo or reed were widely used and prized for their easy storage and flexibility.

In addition to mats, houses also featured bamboo elevated seats known as "Krae," and more sophisticated seating for the upper classes, such as "Tang" and "Yaeng."



Figure 3 Traditional sitting posture and Tang in Thai paintings

From the paintings, we can observe the sitting postures and seating arrangements of the Thais in the past, reflecting their stories and lifestyles. Sitting on the floor signifies modesty, while elevated seating, such as beds and stools, often express social status and the importance of cultural ceremonies. These paintings refer to the lifestyle and culture of Thais through the depiction of sitting postures and different types of seating that emphasize values such as simplicity, modesty and social status.

The seating customs in Siam also reflect the influence of Buddhism, the predominant religion. In the temples, seats or raised furniture were generally reserved for monks, while lay people usually sat kneeling, cross-legged or with their legs crossed on the floor. This posture was a symbol of respect, particularly in the presence of high-ranking monks or people of higher status. These practices were an essential part of Siamese sitting culture.



Figure 4 The Buddha's Passing into Nirvana, mural painting, Phutthaisawan Throne Hall, National Museum, Bangkok.

Nakrob Mulmanas, (2020). stated that "Sitting" is one of the most basic postures. Modern people are so used to it that he considers it a common gesture. But that may not have been the view of people in the Ayutthaya period. More than 300 years ago, Simon de la Loubère, an ambassador to the court of King Louis XIV of France, traveled to Ayutthaya. After spending about three months in this unfamiliar land, he meticulously documented many aspects of his experiences in Siam. His notes have since become invaluable historical evidence. One topic that particularly caught my attention was de la Loubère's observation: "How do Siamese people sit?"

This led me to ask whether the "sitting" of the Siamese is different from that of other nations. The French ambassador explained this question as follows: "How do the Siamese sit?"



Figure 5 A high-ranking woman sits on a stool while her attendants sit on the floor, photographed around 1867, the National Archives

The neat posture that the Siamese adopt when sitting is like the way the Spanish sit. They sit cross-legged and are used to sitting in this way. Even when a chair is provided, they sit in the same position without changing to another (i.e. they sit cross-legged on the chair without dangling their feet).

In another passage, this French ambassador describes the furniture used by the Siamese: "They do not use chairs but sit on mats of various fine or coarse weaves." From these writings, we can see that people in Ayutthaya

were not accustomed to sitting on chairs and that chairs were not common in Ayutthaya because they were imported furniture from other countries. The Fine Arts Department's Thai Dictionary of Words Originating from Foreign Languages (1997) explains this, noting that the word "chair" comes from Teochew Chinese, which literally translates to "high seat" and means The Cloud (2020).



Figure 6 His Royal Highness Prince Worachak Dharanupap, the founder of the Pramoj family, the son of King Rama II, sits on a pedestal.



Figure 7 Thai food from Ayutthaya to Bangkok from a foreign perspective,

Nakrob Mulmanas, (2020). stated that in the *Testimony of Khun Luang Wat Pradu Songtham*, a document from the Royal Archives, the market area in Ayutthaya is described as follows:

“The road in the Sam Ma area, from the foot of Tapao in Kai Krawan to the corner of Phra Nakhon, which is called Hua Sarapha, was the place where the Chinese set up factories to produce various kinds of dry goods and pastries. Chinese carpenters also made tables, beds, cabinets and chairs, large and small, which they sold.”

The reason chairs were not popular is because traditional Thai culture was primarily used to sitting on the floor. Chairs or seats were not common in typical households. However, there were people with positions of power in society who seemed to have the privilege of moving to a higher level above the floor to assert their rank and status over others. In the past, for example, kings, nobles or monks would sit on platforms, stools or special seats at public gatherings. However, it was not always the case that important personalities had to sit on elevated seats.



Figure 8 Books and Many Other Things in the Royal Court

When Siam fully embraced Western civilization during the reign of King Rama IV, the tradition of sitting on the floor changed forever, as it was seen as a backward practice through the Western lens. What King Rama V did then was something of an official announcement of Siam's entry into the modern world. Of course, such a significant change was not as simple as a snap of the fingers.

The Fine Arts Department's book *Thai Art and Culture, Volume 3: Customs and Traditions of Rattanakosin* (1982) states: 'When the royal court abandoned the practice of prostration and began to use chairs, the Thai people were not yet accustomed to sitting on chairs. Women sat on the chair with their legs bent, while men sat on the chair in a meditation posture. This prompted King Rama V to issue a royal decree instructing the correct way to sit on a chair— - to place only the buttocks on the chair and let the legs hang down. The Cloud (2020).

Pornpun Thongtan (2016) discusses this topic in the Glossary of Thai Words with Origins in Foreign Languages. To summarize briefly: In ancient times, there were no chairs in Thai households as our traditional culture involved sitting and lying on the floor. Even meals were eaten sitting in a circle by placing the dishes on the floor. Therefore, Thai people's furniture in the past consisted only of items like mats, rugs and bolster cushions. It is believed that we adopted this type of furniture from the Chinese because the word "เก้าอี้" (chair) is not a native Thai sound, but is similar to "gāo yǐ" in Teochew Chinese or pronounced as "jiāoyǐ", in Mandarin, where "jiāo" means high and "yǐ" means seat, so the word refers to a high seat. It is likely that the Thai word "เก้าอี้" is either a modified pronunciation of the Teochew Chinese pronunciation "gao yi".

Despite modernization, traditional seating is still prevalent in many Thai households and cultural practices. Floor seating is still commonly used for meals, religious ceremonies and gatherings. In Thailand today, designers have begun to redesign traditional Thai seating, incorporating modern aesthetics and ergonomic principles. This has led to the development of furniture that respects the cultural heritage while meeting modern needs for comfort and functionality.

The persistence of traditional seating in Thailand today is a symbol of cultural resilience. It reflects the enduring importance of modesty, respect and community in Thai society, even as the country continues to modernize. The history of Siam seating is thus a reflection of Thailand's broader cultural history, which is characterized by a balance between tradition and adaptation. Nakrob Mulmanas, (2024).

Abhisit Laisatrulchai (2015) mentioned about the importance of chairs that if chairs were only for the purpose of sitting for daily activities such as working, eating, studying or relaxing, we would not see any difference in chairs. And in some societies, people sit, sleep and eat without needing a chair at all. In Siamese society before the reign of King Rama IV, there was no culture of sitting on chairs. Even in India before the British colonial period, there were stories that showed the misunderstanding between the two societies regarding sitting on chairs. When the British came to control tea production and found that Indians sitting on the ground while plucking tea leaves showed uncivilization, cleanliness and inefficiency, they developed a new system of plucking tea leaves by designing long tables and chairs so that workers could sit and work comfortably. However, when the British returned to re-inspect the factory, they found that the Indian workers had climbed onto the prepared table to pick the tea leaves instead of sitting on chairs, and were thus part of the cultural change in society.

The chairs used in the early days were simple benches like those found in noodle stores. Chairs with backs and arms were only introduced to Thailand later (there are records of the Chinese adopting chairs with backs and arms from merchants with whom they traded). However, the Thais continued to call both types of furniture "เก้าอี้," in reference to the Chinese term.



Figure 9 Inside the Suthaisawan Prasat Throne Hall during the reign of King Rama V. The group of chairs on the right is the Tonet chair., National Archives of Thailand, Fine Arts Department, (2018)

Western-style chairs became an important item of furniture in the daily lives of the elite. While the primary purpose of the chairs during the reign of King Rama IV was probably for display rather than actual use, they were increasingly put to practical use. The Royal Daily Chronicle, written by King Rama V, mentions that the King received several chairs as New Year's gifts in 1880:

"Today is New Year's Day, and as usual, people exchanged greetings and distributed sweets. Various gifts were presented by the royal family and government officials, including ... or Ong Dit presented a three-legged wicker chair and an easy chair that can be used for both sitting and reclining, two pieces in total. Krom Phichit presented an easy chair that resembles a bed."

This reflects the values of the time, when western chairs were considered valuable and prestigious items. The wealth of the Siamese royal court and the height of the popularity of chairs can be seen in the decoration of the Suthaisawan Prasat Throne Hall. John Thomson photographed this hall during the reign of King Rama IV and captured an image of monks, royalty and court officials all seated on the floor.

Pakpoom Chantaban, (1995) mentioned that the way of life and the condition of the land of the majority of people certainly influences the need for Thai furniture. If we look at the different postures, it is not necessary because a mat on the floor is enough for sleeping, sitting or other activities. In addition, the houses of ordinary people are made of bamboo and are not exceptionally large. The usable area of the building is therefore limited, therefore the same area is used for several purposes, like for eating, sleeping, and sitting, only change the special mat for specific purpose, not mixed. It can be said that the common people, who make up the majority of the country's citizens, do not have furniture and do not even think of using it because there is no need. Furniture is only used in the royal court and the noble class with status, but there are only a few types. This is due to the customs and traditions of the Thai people at that time.

Thai furniture that appeared in the reign of King Narai the Great, according to Laloubere and Father Tachard It is recorded that furniture in this era can be classified as follows:

- Sedge mats for sleeping, sitting, etc., mainly used in general
- Bamboo beds, usually placed under the house
- Tables
- Solid chests, Japanese chests, chests with drawers
- Cupboards
- Room dividers
- Talum (used instead of dining tables, when you sit and eat on the floor and place the food in the Talum)

Klaewthanong Sornsung (2016) mentioned that the chair styles of Thai designers that are popular in design and have been successful in rankings and competitions are modern contemporary styles that are simple and modern and can be combined with various furniture of today. There are designs with smooth lines that look calm, are not cluttered, use materials in the same color tone as natural materials, emphasize utility and beauty, look clean, emphasize natural light, look warm and beautiful, follow the characteristics of the home culture of people in Northern Europe, or what we know as Scandinavian style, and designs that show the original materials, wooden surfaces, steel structures or leather in loft style. There are different works that

are combined to create harmony and balance. For example, the Classical and Modern decoration style, when combined, creates a perfect balance between modern and contemporary styles. It has an independent shape and can be arranged as follows:

- Chair without backrest (stool)
- Chair with backrest (dining Chair)
- Chair with backrest and armrest (armchair)
- Easy chair

2.1.1 Thai Sitting Posture

Sitting is an integral part of Thai culture and reflects traditional practices that predate the use of chairs. Historically, Thais sat on the floor, a practice rooted in cultural norms. However, with increasing contact with Western countries, Thailand adopted Western achievements, including chairs. Initially, chairs were not used in a way that was compatible with Thai traditions. Over time, as chairs became more common, traditional seating styles had to be adapted to accommodate this new element while preserving Thai cultural values. Despite the western origins of chairs, Thais have maintained their cultural etiquette by sitting in a way that demonstrates politeness and respect, especially in the presence of elders. This respectful sitting posture remains an important aspect of Thai manners and reflects a blend of tradition and modernity. Such practices are not only a testament to cultural heritage, but also a universal expression of respect that can be appreciated in diverse cultures around the world. It is a heritage of our ancestors that is still important and should be preserved.

The etiquette for sitting can be divided into the following categories:

Cross-legged means sitting flat on the floor with the legs crossed so that the right leg is over the left leg or the left leg is over the right leg.

Sitting cross-legged (Sa-Ma-T) means sitting comfortably and sitting for meditation (Sa-Ma-T)

Crouching means sitting cross-legged, holding the tips of the feet, bending until both elbows touch the floor, spreading the knees stretched forward, clasping the hands, not lowering the head and looking down. Both men and women can practice this sitting style.

Kneeling means sitting with the knees bent towards the floor.

Sitting on a chair Sitting on a chair generally means sitting comfortably. If it is a chair with armrests, rest your arms on them.

2.2 Siam Seating

It is difficult to trace the evolution of furniture in Thailand. Evidence can only be found from the reign of King Narai the Great (from 2199 BC). This is mainly due to the fact that most mural paintings, stone carvings and stucco work from this period focus on religious themes and the life of the Buddha and there are few records of daily life in Thai history. However, these artworks often contain depictions of society, behaviors and traditions, such as the form of Thai architecture that reflects real life. It is evident that various activities such as sitting, sleeping and eating were traditionally carried out at ground level, with people sitting directly on the floor. Pakpoom Chantaban (1995)

The behavior and lifestyle of the Thai people have strongly influenced the design of furniture and various household items from the past to the present. Thai people traditionally perform activities such as sleeping, sitting, eating and cooking mainly on the floor. These activities are usually conducted on the floor with only a mat or cloth as a cushion. Some families use a bamboo bed that serves as both a seat and a bed. However, it is typically low and narrow to fit the living space and allow for ease of use. Some use additional cushions to increase seating comfort.



Figure 10 Thai Seating



Figure 11 Thai Seating Behavior

Traditional seating furniture from Siam, which has been used for a long time and can still be found today, reflects the diversity of lifestyles and cultural practices that have been passed down through generations. These chairs not only embody creativity and finesse in design, but also emphasize the connection between the Thai people, nature and an uncomplicated way of life. There are several types of traditional Thai chairs, such as the following:







2.2.1 Mat: A mat is a floor covering made from natural materials such as reeds or pandan leaves. The use of mats for sitting has long been part of Thai life as they are comfortable to carry and easy to use. Mats can be used for various activities such as sitting and eating, lying down to rest or during ceremonies. They are widely used in all regions of Thailand.



Figure 12 Sedge mat, Uttaradit Province

Dried sedge are processed into yarn, dyed and woven into sheets that are used as seating or mattresses in daily life. Sedge mats are very popular with the Thai people. The manufacturing process reflects the unique local wisdom of each community. In many cases, it also shows the influence of knowledge sharing and common techniques that have made sedge mats an important part of Thai people's lives in the past.

Table 2 Mat Types of Seating, Feature, Size, Usage and Function, and Posture and Behavior

TYPES OF SEATING	FEATURE	SIZE	USAGE AND FUNCTION	POSTURE AND BEHAVIOR
<p>1 MATS</p>   	<p>Mat are flat and flexible pieces that are laid on the floor.</p> <p>Laying: Mats are often laid directly on the floor to provide a more comfortable feeling.</p> <p>Usage: They are used in houses with wooden or concrete floors. Sedge mats are sometimes used in outdoor areas, such as balconies or gardens, to provide more comfort when sitting or doing various activities.</p> <p>Decoration: Mats used for sitting can have a variety of patterns and colors to match the interior decoration or environment.</p> <p>Folding and Rolling: Due to the flexibility of mats, folding is a convenient way to store them. They are often folded along the length or width to fit into tight spaces.</p> <p>Rolling: Rolling up mats is another popular way to store them. They are rolled tightly to save space and prevent the mat from losing its shape.</p> <p>Storage: Folding or rolling up mats makes them easy to store. They can be stored in a cabinet or under a mattress, so they are ready to use when needed.</p>	<p>The size of the mat used for sitting is usually large enough to provide a comfortable sitting area for home use or outdoor activities.</p> <p>Sizes can be adjusted according to needs.</p> <p>Small: 1000 W. x 1950 L.</p> <p>Medium: 1200 W. x 1950 L.</p> <p>Large: 1400 W. x 1950 L.</p>	<ul style="list-style-type: none"> • Use as a floor mat • Use as a seat • Use as a bed mat   	<p>Mats can be used in many positions as follows:</p> <p>Sitting: Mats can be used for sitting by laying the mat on the floor and sitting on it. It is often used for sitting activities such as eating, meditating or talking.</p> <p>Sleeping: Mats can also be used as a sleeping surface by laying the mat flat and lying on it, especially during times when you want to rest.</p> <p>Meditation or Yoga: For yoga or meditation, sedge mats provide better contact with the body.</p> <p>Relaxation: Mats can be used for general relaxation, such as reading a book or sitting or lying down.</p> <p>Mats are soft and easy to handle, which makes them suitable for use in many daily postures.</p>

2.2.1.1 Types of Seating

Mats are a fundamental element in the traditional Thai seating arrangement. Here is a brief overview of the different types:

Woven Mats (Phanit): They are usually made from natural materials like bamboo, reeds or palm leaves. They can be flat or lightly padded and provide a comfortable surface to sit on. Woven mats are often used for daily activities and in communal spaces and reflect the simplicity and natural harmony of Thai culture.

Cushioned Mats (Pad): These mats are usually padded for extra comfort and are often used for prolonged sitting or meditation. They can be covered with fabric and are used both indoors and outdoors. Upholstered mats provide a softer seating surface and can be easily moved or rolled up for storage.

Decorative Mats: These mats are often more elaborately designed and may include intricate patterns or colors. They are used for ceremonial or formal occasions and are sometimes placed in front of altars or important areas in a house.

Floor Mats: Although less common in traditional Thai settings, modern floor mats made of synthetic materials can also be found. These mats are comfortable and easy to clean and are used in modern Thai homes.

2.2.1.2 Feature

Features

are flat and flexible pieces that are laid on the floor.

Laying: Mats are often laid directly on the floor for a more comfortable feel.

Usage: They are used in houses with wooden or concrete floors. Sedge mats are sometimes used in outdoor areas, such as balconies or gardens, to provide more comfort when sitting or doing various activities.

Decoration: Seat mats can have a variety of patterns and colors to match the interior decoration or environment.

Fold and Roll: Due to the flexibility of mats, folding is a convenient way to store them. They are often folded lengthwise or widthwise to fit into tight spaces.

Rolling up: Rolling up mats is another popular way to store them. They are rolled up tightly to save space and prevent the mat from losing its shape.

Storage: Folding or rolling up the mats makes them easy to store. They can be stored in a cupboard or under a mattress so that they are ready for immediate use.

The size of the seat mat usually large enough to provide comfortable sitting area for home use or outdoor activities.

Sizes can be customized as needed.

Small: 1,000 cm x 1,950 cm

Medium: 1,200 cm x 1,950 cm

Large: 1,400 cm x 1,950 cm

2.2.1.4 Usage and Function

- Use as a doormat
- Use as a seat
- Use as a bedside rug

2.2.1.5 Posture and Behavior

The mats can be used in the following positions:

Sitting: Mats can be used for sitting by placing the mat on the floor and sitting on it. They are often used for seated activities such as eating, meditating or conversation.

Sleeping: Mats can also be used as a sleeping surface by laying the mat flat and lying on it, especially when you want to rest.

Meditation or Yoga: For yoga or meditation, sedge mats offer better contact with the body.

Relaxation: Mats can be used for general relaxation, such as reading a book or sitting or lying down.

The mats are soft and easy to handle, making them suitable for many daily postures.

2.2.2 **Krae:** The bamboo bed is a piece of wooden furniture that serves as a slightly raised platform. It is made of wood or bamboo, with the top often covered with a mat or other material to provide softness and comfort. Krae is used in traditional Thai homes as seating or beds, particularly in rural areas where they remain popular due to their durability and versatility.







Figure 13 Bamboo bed or Krae

The Krae is made from bamboo and benefits from the strength, flexibility and sustainability of the material. The bamboo is carefully cut, treated and assembled into a flat, raised surface that is both durable and supportive.

The Krae fulfills various functions in Thai households. It is primarily used as a bed, but can also be used as a daybed, seating area during the day, or even as a platform for drying food and other items. As its lightweight construction, it can be easily moved if necessary.

The Krae reflects traditional Thai values of modesty, simplicity and closeness to nature and has been a staple in rural Thai homes for generations. Despite the advent of modern furniture, it is still used in some regions today.

Table 3 KRAE Types of Seating, Feature, Size, Usage and Function, and Posture and Behavior

TYPES OF SEATING	FEATURE	SIZE	USAGE AND FUNCTION	POSTURE AND BEHAVIOR
<p>2 KRAE</p> 	<p>Characteristics of the KRAE:</p> <p>Structure:</p> <p>Legs: There are 4 sturdy legs to provide good weight support.</p> <p>Elevation: It is raised from the ground to make it easy to sit and increase comfort.</p> <p>Materials: Often made of wood, bamboo, or strong materials.</p> <p>Some beds may use a combination of materials such as wood and metal.</p> <p>Seats: The seating area may be made of wood planks or durable materials.</p> <p>Cushions or pillows may be provided for added comfort.</p> <p>Usage:</p> <p>Indoor: Use in a seating area such as a living room, guest room, or garden.</p> <p>Outdoor: Use in a garden, balcony, or area where outdoor seating is required.</p>	<p>The appropriate bed size depends on the application and the space required. Choosing the right size will help increase comfort and good usability.</p> <p>Small: 800 W. x 1500 L. x 450 H.</p> <p>Medium: 1000 W. x 1800 L. x 450 H.</p> <p>Large: 1300 W. x 1800 L. x 450 H.</p>	<ul style="list-style-type: none"> • Use as a bench • Use as a seat • Use as a bed   	<p>Sitting or lying on a "Krae" (traditional Thai bamboo or wooden platform) is a practice still seen in parts of Thailand. The Krae, a slightly elevated, flexible surface, offers comfort for various postures:</p> <p>Sitting on a Krae:</p> <p>Cross-Legged: Sitting with legs crossed provides stability and reflects simplicity and respect in Thai culture.</p> <p>Side-Sitting (Nang Pueb):</p> <p>Legs are folded to one side, suitable for formal occasions like religious ceremonies.</p> <p>Dangling Legs:</p> <p>A relaxed position with legs hanging off the platform, ideal for resting or chatting.</p> <p>Lying on a Krae:</p> <p>Side-Lying: Lying on the side, head resting on a pillow, perfect for relaxation.</p> <p>Back-Lying: Lying flat on the back to relax and rejuvenate.</p> <p>Curling Up: A curled-up position, providing warmth, ideal for cooler weather.</p>

2.2.2.1 Types of seating

In traditional Thai seating, Krae refers to a type of low platform or bench used for sitting. Here are some types and characteristics:

Simple Wooden Platforms: These are simple wooden structures that stand a few centimeters above the ground. They are often used in rural areas or traditional homes and provide a clean, simple seating area. They can be used on their own or with mats and cushions for extra comfort.

Low Benches: These are like wooden platforms but can have backrests or armrests. They can be used both indoors and outdoors and are often placed in communal areas or gardens. Compared to simple platforms, they offer a little more support and comfort.

Decorative Wooden Stools: These stools are often artistically carved or designed and can be used for festive or special occasions. They combine functionality with esthetics and reflect traditional Thai craftsmanship.

Collapsible or stackable platforms: Modern versions of the traditional Krae foldable or stackable, making them easy to store or transport. These are often used in more modern settings or for events where flexibility is required.

These types of Krae serve different purposes, from everyday use in the home to more formal or ceremonial purposes, and reflect the traditional Thai value of simplicity and practicality of seating.

2.2.2.2 Characteristic

Characteristics of the KRAE:

Structure:

Legs: There are 4 sturdy legs that support the weight well.

Materials: Often made of wood, bamboo or other strong materials.

Some beds are made of a combination of materials such as wood and metal.

Seats: The seat can be made of wooden planks or hard-wearing materials. Cushions or upholstery may be provided for extra comfort.

Use:

Indoors: Use in a seating area such as a living room, guest room or garden.

Outdoor: Use in the garden, on the balcony or in an area where outdoor seating is required.

2.2.2.3 Size

The appropriate bed size depends on the application and the space required. Choosing the right size contributes to greater comfort and good usability.

Small: 800 mm W x 1,500 mm L x 450 mm H

Medium: 1,000 mm W x 1,800 mm L x 450 mm H

Large: 1,300 mm W x 1,800 mm L x 450 mm H

2.2.2.4 Usage and Function

- Use as a bench
- Use as a seat
- Use as a bed

2.2.2.5 Posture and Behavior

Sitting or lying on a "Krae" (a traditional Thai bamboo or wooden platform) is a practice that is still common in parts of Thailand. The Krae, a slightly raised, flexible surface, provides comfort for different postures:

Sitting on a Krae:

Cross-Legged: Sitting cross-legged provides stability and reflects simplicity and respect in Thai culture.

Sitting sideways (Nang Pap peap):

Legs are folded to one side, suitable for formal occasions like religious ceremonies.

Hanging legs:

A relaxed position with legs hanging off the platform, ideal for resting or chatting.

Lying on a Krae:

Side-Lying: Lying on your side with your head resting on a pillow, perfect for relaxing.

Back-Lying: Lying flat on your back to relax and rejuvenate.

Curled up: A curled up position that provides warmth and is ideal for cooler weather.

2.2.3 Tang: A tang is a wooden seat with a stable structure, characterized by a large platform that can be used for sitting or reclining. Tang is often used in formal settings or important ceremonies, such as welcoming guests into the home or supporting monks in temples during religious activities. Tang is known for its unique and beautiful Thai style, especially for its carved patterns that reflect traditional Thai art.









Figure 14 Tang

Source: Teak furniture, Ban Panya 2024

A stool is an object that is made for sitting on. It is a rectangular wooden platform without a backrest with legs that are about 1 sok high (50cm). Most have the shape of a lion with curved legs, but these are few and only stools from later times. It is noticeable that there are more stools with lion legs than with curved legs, which is probably because most ancient people, kings, nobles and monks, used more stools than ordinary people. Yaeksee Kanoksin, (2020).

Table 4 TANG Types of Seating, Feature, Size, Usage and Function, and Posture and Behavior

TYPES OF SEATING	FEATURE	SIZE	USAGE AND FUNCTION	POSTURE AND BEHAVIOR
<p>③ TANG</p> <p>3.1 TAUNG BENCH</p>  <p>3.2. TANG BED</p>  	<p>Tang Bench and Bed Structure:</p> <p>Base: Has a sturdy base, which may be made of wood, metal, or other materials. The base is usually designed to support the weight.</p> <p>Legs: Often have legs to lift the bench off the ground. The legs may be made of the same material as the base or a different material.</p> <p>Seat Materials: The seat may be made of a variety of materials, such as wood, foam, or a flexible material.</p> <p>Coverage: Sometimes covered with fabric or materials that provide additional comfort, such as cushions or pillows.</p>	<p>Tang Bench is designed to be strong and durable and can support weight well. Benches are traditional furniture found in Thai homes. They come in a variety of sizes depending on their use and the space they are placed in. The common sizes of benches are as follows:</p> <p>Size: 700 W. x 1000 L. x 450 H.</p> <p>Tang Bed is a traditional piece of furniture designed for sleeping. They come in different sizes depending on their use and the space they are intended for. Common nightstand sizes include:</p> <p>Small: 900 W. x 2000 L. x 450 H. Medium: 1000 W. x 2000 L. x 450 H. Large: 1280 W. x 1980 L. x 450 H.</p>	<ul style="list-style-type: none"> Use as a bench Use as a seat Use as a bed   	<p>Normal Sitting Position: Sitting: Sit up straight on a seat of moderate height, with or without a backrest. Legs: Both feet should be placed flat on the floor for comfort.</p> <p>Leaning Back: Sitting: Sit on a stool with a backrest, leaning back to support your spine. Legs: Both feet should be on the floor, or you may cross your legs.</p> <p>Cross-Legged Sitting: Sitting: Sit cross-legged or squat on a stool without a backrest. Legs: Fold both legs together and rest them on the seat.</p> <p>Leg Recline: Sitting: Lean back slightly on a stool with a backrest. Legs: Place both feet flat on the floor or cross one leg over the other.</p> <p>Lying on a Stool: Back-Lying: Lie on your back on a stool, with your legs straight and hands at your sides. Legs: Keep both legs straight or slightly raised for comfort.</p> <p>Side Lying: Position: Lie on your stomach on a stool, using a pillow to support your abdomen or chest. Legs: Keep both legs straight or lift them slightly.</p> <p>Reclining: Sleeping: Lie back using a pillow to support your head and legs. Legs: Both legs can be slightly lifted or placed straight on the floor.</p>

2.2.3.1 Types of Tang

The term "Tang" (ตั่ง) refers to traditional Thai furniture that is often used for both sitting and sleeping. Here are some types of Tang:

Tang Bench (Tang Nang): These are low platforms made of wood or bamboo that are meant for sitting. They are typically used in traditional Thai homes and are associated with the cultural practice of sitting close to the ground. Tang Nang is often used in conjunction with cushions or mats to increase comfort.

Tang Bed (Tang Non): These are low platforms or beds used for sleeping. Like Tang Nang, they are designed to stand close to the ground and are often used with mats or bedding. Tang Non reflects the traditional Thai practice of sleeping on the floor, which is considered healthy and comfortable.

Both types of Tang are an integral part of traditional Thai interior design and reflect cultural values such as simplicity, modesty and a close connection to nature. They are often made from natural materials like wood and bamboo and their design emphasizes functionality and ease of use.

2.2.2.2 Feature

Tang Bench and Bed Structure:

Base: Has a stable base, which can be made of wood, metal or other materials. The base is usually designed to support the weight.

Legs: They often have legs to lift the bench off the ground. The legs can be made from the same material as the base or from a different material.

Seat Materials: The seat can be made of different materials, e.g. wood, foam or a flexible material.

Covering: Sometimes covered with fabric or materials that provide additional comfort, such as cushions or upholstery.

2.2.2.3 Size

The Tang Bench is designed to be strong and durable and to support weight well. Benches are traditional furniture found in Thai homes. They come in different sizes depending on their intended use and the place where they are placed. The common sizes of benches are as follows:

Size: 700 mm W. x 1,000 mm L. x 450 mm H.

Tang Bed is a traditional piece of furniture designed for sleeping. They come in different sizes, depending on their purpose and the room they are intended for. Common bedside table sizes are:

Small: 900 mm W. x 2,000 mm L. x 450 mm H.

Medium: 1,000 mm W. x 2,000 mm L. x 450 mm H.

Large: 1,280 mm W. x 1,980 mm L. x 450 mm H.

2.2.2.4 Usage and Function

- Use as a bench
- Use as a seat
- Use as a bed

2.2.2.5 Posture and Behavior

Normal Sitting Position:

Sitting: Sit Upright on a seat of medium height, with or without a backrest.

Legs: Place both feet flat on the floor for comfort.

Leaning Back:

Sitting: Sit on a stool with a backrest and lean back to support your spine.

Legs: Both feet should be on the floor, or you can cross your legs.

Cross-Legged Sitting:

Sitting: Sit cross-legged or squat on a stool without a backrest.

Legs: Put both legs together and rest them on the seat.

Leg Recline:

Sitting: Lean back slightly on a stool with a backrest.

Legs: Place both feet flat on the floor or cross one leg over the other.

Lying on a Stool:

Back-lying: Lie on your back on a stool with your legs stretched out and your hands at your sides.

Legs: Keep both legs extended and slightly raised for comfort.

Side Lying:

Position: Lie on your stomach on a stool and support your stomach or chest with a pillow.

Legs: Keep both legs straight and raise them slightly.

Reclining:

Sleeping: Lie on your back and support your head and legs with a pillow.






Legs: Both legs can be raised both legs slightly and place them straight on the floor.

2.2.4 **Yaeng** is a characteristic wooden seat, typically made of hardwood, with a backrest and armrests. Yaeng was traditionally used in upper class homes or by monks, as it is graceful and reflects social status. Yaeng is also considered a symbol of comfort and well-being in traditional Thai life.



Figure 15 Carved teak Yaeng.

Table 5 Yaeng Types of Seating, Feature, Size, Usage and Function, and Posture and Behavior

TYPES OF SEATING	FEATURE	SIZE	USAGE AND FUNCTION	POSTURE AND BEHAVIOR
<p>4 YAENG</p> <p>4.1 YAENG SEAT</p>  <p>4.2. YAENG BED</p> 	<p>Feature of Yaeng Materials: Wood: Often made of hardwood like teak or ebony. Other Materials: Sometimes constructed from durable and strong materials such as bamboo or composite materials. Structure Base: Has a wide base to support weight, typically lower than a standard mattress. Legs: Often has short legs or none at all, with the base touching the floor. Seat Design: The seat is usually flat and lacks a backrest, providing a flat Surface Coverage: Sometimes covered with soft material or cushions for added comfort. Shapes Rectangular: The most common shape, suitable for sitting or sleeping. Round: Some Yaeng may have a round shape for versatility. Use: Indoor: Used in living rooms, bedrooms, or other seating areas. Outdoor: Sometimes used in gardens, balconies, or outdoor areas, where weather protection is necessary.</p>	<p>Yaeng Seat is designed to be strong and durable and can support weight well. Armchair are traditional furniture found in Thai homes. They come in a variety of sizes depending on their use and the space they are placed in. The common size as follows:</p> <p>Size: 600 W. x 1200 L. x 450 H.</p> <p>Yaeng Bed is a traditional piece of furniture designed for sit and laying. They come in different sizes depending on their use and the space they are intended for. The common size as follows:</p> <p>Size: 1000 W. x 2000 L. x 450 H.</p>	<ul style="list-style-type: none"> Use as a bench Use as a seat Use as a bed   	<p>Normal sitting: Sitting position: Sit upright on the sling with both legs on the floor Leg position: Both legs are straight or crossed for comfort</p> <p>Cross-legged sitting: Sitting position: Sit cross-legged or squatting on the sling with no special support Leg position:</p> <p>Both legs are folded together and placed on the seat Reclining sitting: Sitting position: Sit back slightly, leaning against a wall or backrest if available Leg position: Both legs are straight on the floor or crossed Sitting position: Supine lying: Lie on your back on the sling with your legs straight and your hands at your sides Leg position: Both legs are straight or slightly raised for</p> <p>comfort Side lying: Sitting position: Lie on your side on the sling, using a pillow to support your head and body and a bolster Leg position: Both legs are slightly bent and placed on the sling</p> <p>Prone lying: Sitting position: Lie face down on the sling You can use a pillow under your stomach or chest for added comfort. Leg position: Both legs are straight or slightly raised. Lie back: Sleeping position: Lie back on a stilt, using pillows to support your head and legs for comfort.</p>

2.2.4.1 Types of Yaeng

"Yaeng" refers to a type of traditional Thai seating or sleeping furniture. Here's a look at the different types:

Yaeng Seat (Yaeng Nang) These are traditional Thai seating platforms. They are usually low and can be made of wood, bamboo or other natural materials. Yaeng Nang are often fitted with a mat or cushion to provide comfort. The design allows for sitting close to the ground, which is in keeping with traditional Thai customs of sitting and relaxing.

Yaeng Bed (Yaeng Non) These are traditional Thai sleeping platforms similar to the Yaeng Nang but designed for sleeping. They are low to the ground and usually come with a mat or bedding. The Yaeng Non is a simple, functional sleeping arrangement that reflects the traditional Thai preference for sleeping on the floor.

Both Yaeng Nang and Yaeng Non emphasize the cultural emphasis on simplicity and closeness to the floor in Thai design. They offer comfort while respecting traditional practices.

2.2.2.2 Feature

Feature of Yaeng

Materials:

Wood: Often made of hardwood like teak or ebony.

Other Materials: Sometimes also made of durable and strong materials such as bamboo or composites.

Structure Base: Has a wide base to support the weight, typically lower than a standard mattress.

Legs: Often has short legs or no legs at all, with the base touching the floor.

Seat Design: The seat is usually flat and has no backrest, so a flat.

Surface Cover: Sometimes covered with soft material or cushions for extra comfort.

Shapes Rectangular: The most common shape, suitable for sitting or sleeping.

Round: Some Yaeng have a round shape for more versatility.

Uses:

Indoors: Used in living rooms, bedrooms or other seating areas.

Outdoors: Sometimes used in gardens, on balconies or in outdoor areas where weather protection is required.

2.2.2.3 Size

The Yaeng Seat is designed to be strong and durable and to support weight well. Armchairs are traditional furniture found in Thai households. They come in different sizes depending on their use and the room in which they are placed. The usual size is as follows:

Size: 600 mm W. x 1,200 mm L. x 450 mm H.

The Yeang bed is a traditional piece of furniture designed for sitting and lying on. They come in different sizes, depending on their purpose and the room they are intended for. The usual size is as follows:

Size: 1,000 mm W. x 2,000 mm L. x 450 mm H.

2.2.2.4 Usage and Function

- Use as a bench
- Use as a seat
- Use as a bed

2.2.2.5 Posture and Behavior

Normal Sitting:

Sitting Position: Sit upright on the sling with both legs on the floor.

Leg Position: Both legs are stretched or crossed for more comfort.

Cross-legged Sitting:

Sitting Position: Sit cross-legged or in a squatting position on the sling, without special support.

Leg Position: Both legs are folded together and placed on the seat.

Reclining Sitting:

Sitting Position: Lean back slightly and lean against a wall or backrest, if available.

Leg Position: Both legs are straight or crossed on the floor.

Sitting Position: supine position: Lie on your back in the sling with your legs stretched out and your hands at your sides.

Leg Position: Both legs are straight or slightly raised for.

Comfort Side lying:

Sitting Position: Lie on your side in the sling and support your head and body with a pillow and bolster.

Leg Position: Both legs are slightly bent and placed on the sling.

Prone Lying:

Sitting Position: lie face down on the sling. For additional comfort, you can place a cushion under your stomach or chest.

Leg Position: Both legs are straight or slightly raised.

Lie Back: Sleeping position: Lie with your back on a stilt and support your head and legs with pillows for comfort.

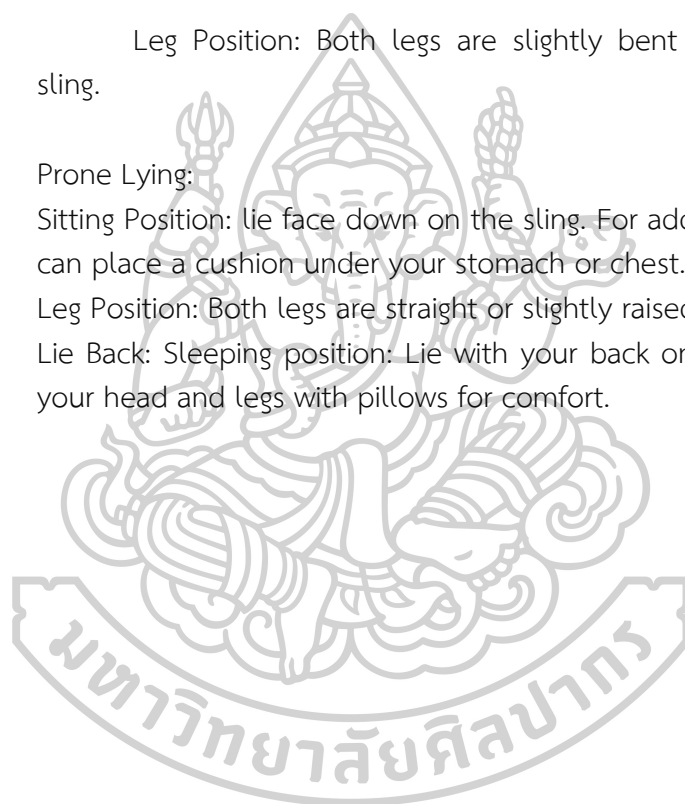












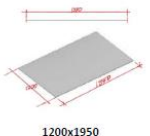
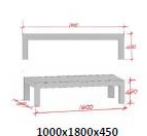
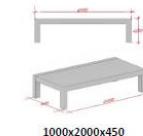





Table 6 Mats, Krae, Tang, Yaeng Seating Dimensions

1 MATS	2 KRAE	3.1 TAUNG BENCH	3.2 TAUNG BED	4.1 YAENG SEAT	4.2 YAENG BED
					
 1000x1950	 800x1500x450	 700x1000x450	 900x2000x450	 600x1200x450	 100x2000x450
 1200x1950	 1000x1800x450		 1000x2000x450		
 1400x1950	 1300x1800x450		 1280x1980x450		

2.3 Western Seating

Surviving examples of chairs from medieval Europe are often ornate pieces associated with royalty and nobility. During the Renaissance, chairs were used more frequently and their design reflected the changing costumes and furnishings of the time. Distinctive designs developed in France and England. In modern times, the range of chair designs and materials has increased enormously. Wikipedia, (2024).

Western seating has a rich history that reflects the evolution of design, comfort and functionality in Western furniture. Early Western seating was simple and functional, such as stools, benches and simple chairs. In wealthier homes, there were ornately carved thrones and armchairs.



Figure 16 Western seating

In the Renaissance, ornate chairs and benches were introduced, often with elaborate carvings and luxurious upholstery. During the Baroque period in the 17th century, seating furniture featured dramatic, heavily carved designs and plush upholstery, while the Rococo style of the 18th century emphasized light, elegant forms with playful curves and ornate, asymmetrical designs in pastel colors. In the Neoclassical period, from the late 18th to the early 19th century, seating furniture became more restrained and elegant, inspired by classical Greek and Roman designs, with clean lines and symmetrical forms. The Empire style focused on grandeur and used materials like mahogany and brass, with rich fabrics and bold, classical motifs. In the Victorian era, seating was a mixture of revivalist styles, often heavily upholstered and featuring intricate carvings and patterns.

At the beginning of the 20th century, modernism evolved into a functional and minimalist design that emphasized clean lines, geometric shapes and new materials like steel and molded plywood. Contemporary design continues to evolve, emphasizing ergonomic comfort, innovative materials and adaptable designs that incorporate styles such as minimalist, industrial and eclectic forms. Western seating uses a range of materials, from wood and metal to fabrics and leather, with modern designs also incorporating molded plastics and composites. Key design principles include ergonomics and comfort, a varied esthetic ranging from highly decorative to minimalist, and functionality with features like adjustability and versatility. Notable styles include Scandinavian design with its emphasis on simplicity and natural materials, mid-century modern with its sleek forms and materials

like molded plywood, industrial style with its raw, utilitarian esthetic and minimalist design with its emphasis on simplicity and clean lines.

Modern western seating and seating furniture often emphasizes a design that is comfortable and functional for everyday use. Seating is often designed to provide good support and adapt to the user's posture, such as

Ergonomic Design: Design that focuses on supporting the body structure to prevent injury or discomfort while sitting, such as office chairs with adjustable backrests and reclining backrests.

Materials: Modern chairs are often made of a variety of materials such as genuine leather, fabric and synthetic materials that are breathable and durable.

Modern Design: Simple shapes and functional designs, such as chairs with a sleek design, stable legs and easy to move.

Adaptability and height adjustability: Chairs that can be adjusted in height or in the angle of the backrest allow the user to adapt their posture to their needs.

Western seating furniture often differs in its dimensions, depending on the style and intended use. Below are some general dimensions for common western design seating:

Sofas Standard Dimensions:

Seat Height: 400-450 mm

Seat Depth: 510-610 mm

Back Height: 760-910 mm

Overall Width: 1,830-2,440 mm

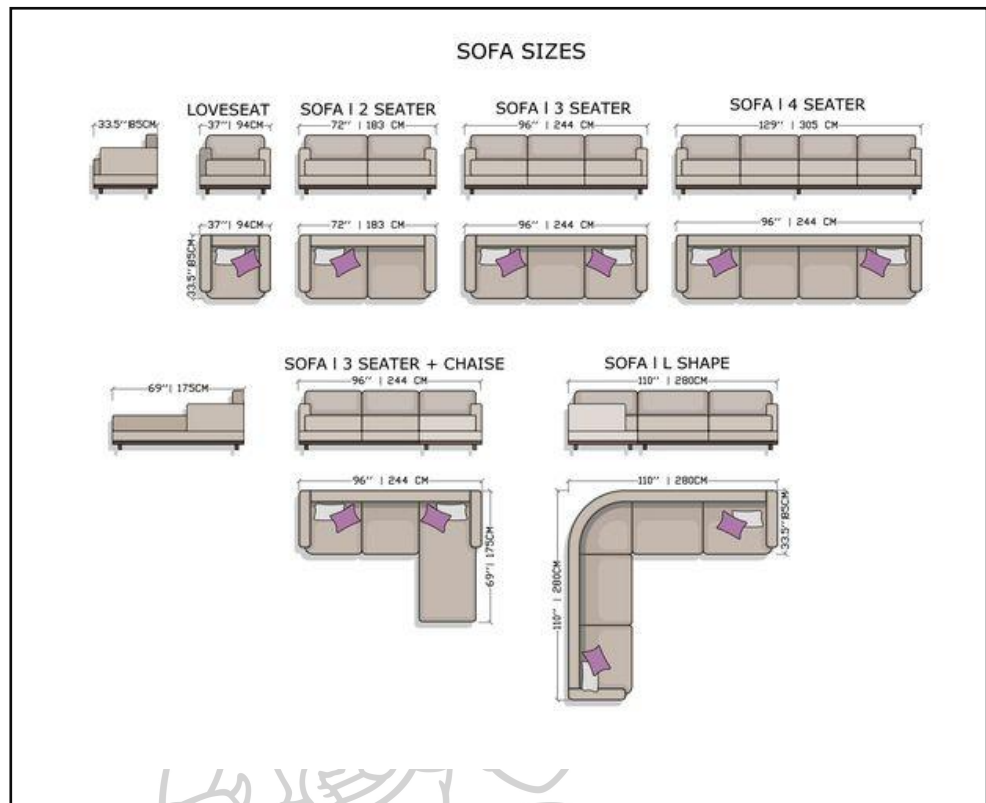


Figure 17 Sofa size dimensions

When choosing an optimal sofa, a comprehensive understanding of standard dimensions is essential to achieve both comfort and functional integration into a living space. Sofas play a central role in interior design. They not only serve as a place to relax but are also a pivotal component of the overall esthetic composition of a room. Adhering to standard dimensions in sofa design facilitates compatibility with different room sizes while ensuring adequate seating capacity and ergonomic suitability. This introduction looks at the typical dimensions and critical considerations involved in determining standard sofa dimensions, providing a basis for making informed and discerning decisions when choosing this important piece of furniture.

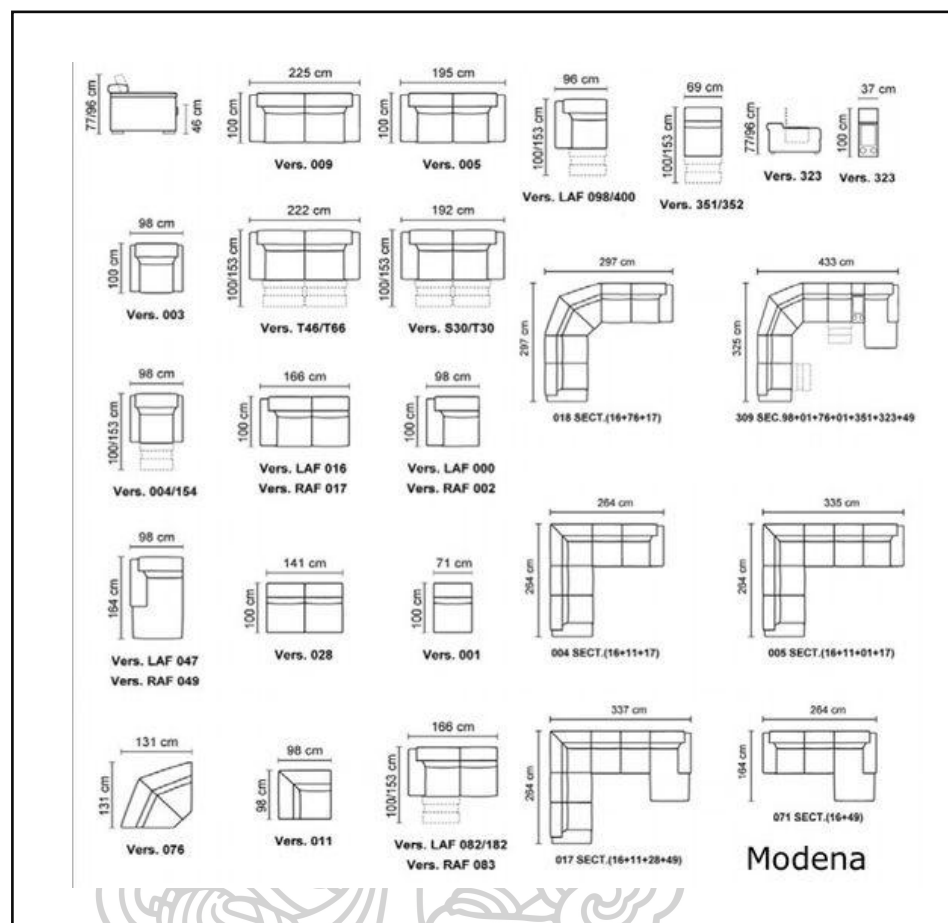


Figure 18 Sofa size dimensions

In interior design, the armchair is more than just a functional piece of furniture; it is an expression of style and comfort that enhances the overall ambience of a space. To achieve a harmonious balance between form and function, it is important to know the standard dimensions of an armchair. The dimensions of an armchair affect its comfort, ease of use and the way it combines with other elements in a room. This introduction looks at the key measurements and considerations that define the standard dimensions of armchairs and offers insights to help make informed decisions when choosing an armchair that meets both the esthetic and practical requirements of a living space.

Armchairs Standard Dimension:

Seat Height: 400-450 mm

Seat Depth: 460-560 mm

Back Height: 760-970 mm-

Overall Width: 610-910 mm Arm Height: 610-760 mm

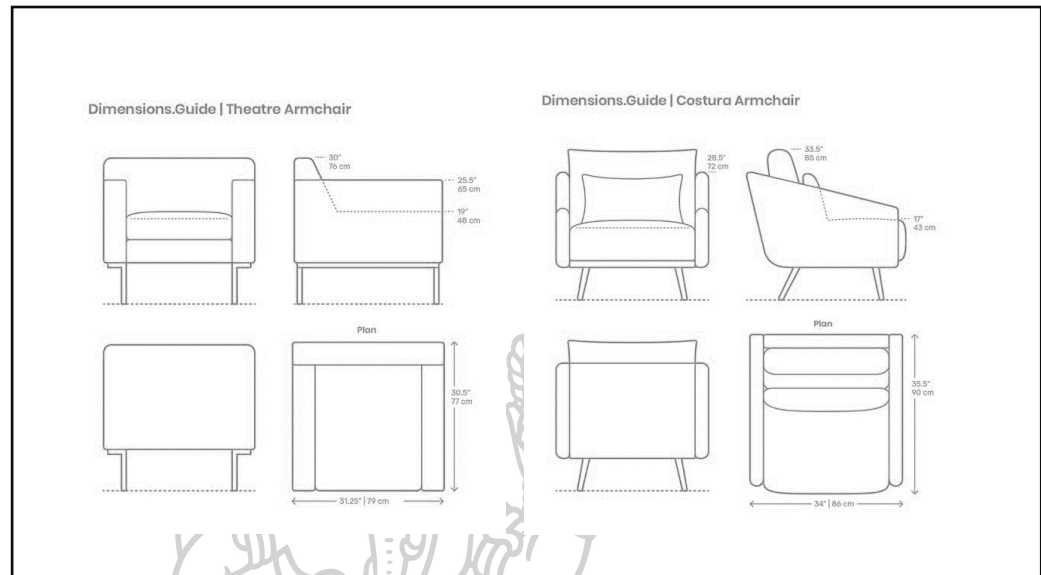


Figure 19 Armchair size dimensions

The standard dimensions of a stool or ottoman are crucial to ensure that it meets both functional and ergonomic requirements. Key dimensions such as height, seat width and overall proportions must be carefully considered to ensure comfort, stability and suitability for the intended use. This introduction looks at the essential dimensions and factors that define the standard dimensions of stools and provides insight into selecting the appropriate stool for different environments and purposes.

Stool Standard Dimensions:

Height: 400-450 mm, depending on the intended use.

Seat Width: 300-400 mm, a wider seat is preferred for more comfort.

Seat Depth: 300-400 mm, depending on the design and intended use.

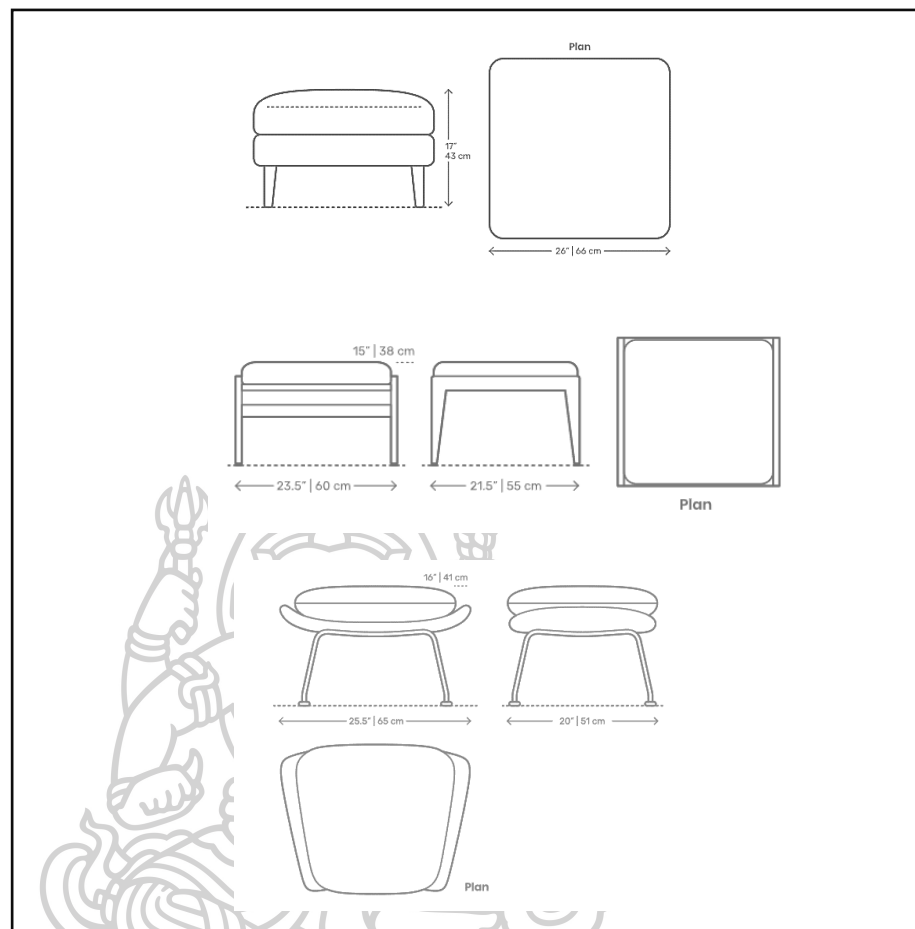


Figure 20 Stool or Ottoman size dimensions

The dimensions of a bench play a crucial role in determining its functionality, comfort and suitability for different environments. Knowing the key dimensions such as length, height, seat width and depth is crucial for designing or selecting a bench that meets both ergonomic standards and esthetic preferences. This introduction looks at the standard dimensions of benches and provides a guide to choosing the right bench for different environments, whether for public spaces, residential areas or commercial use.

Benches:

Seat Height: 400-450 mm

Seat Depth: 300-410 mm

Overall Width: 910-1,830 mm, depending on length

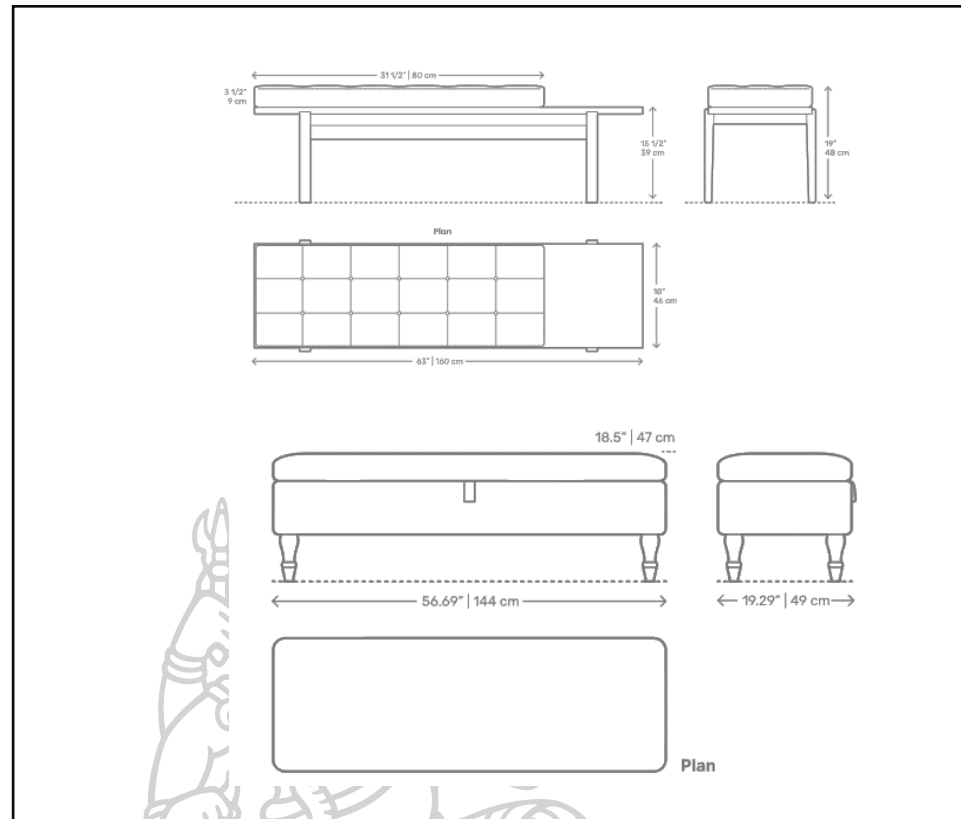


Figure 21 Stool or Ottoman size dimensions

The dimensions of a daybed are crucial to its comfort, functionality and fit in a room. Daybeds are versatile pieces of furniture that can be used as a sofa during the day and as a bed at night. Therefore, their dimensions are particularly important for both uses. Here are the standard dimensions for daybeds:

Length: 1,900-2,030 mm. 75-80 inches (190-203 cm). Due to this length, the bed can accommodate a standard twin mattress, which is usually 97 cm wide.

Width: 990-1,070 mm. The width is designed for a standard twin mattress and offers enough space for comfortable sitting and sleeping.

Height: 760-910 mm, from the floor to the top of the backrest or headboard. This height ensures comfort when sitting or lying down and makes it easy to use the daybed as a bed.

Seat Depth: 610-760 mm. This dimension is crucial for comfort when using the daybed as a sofa or reclining surface.

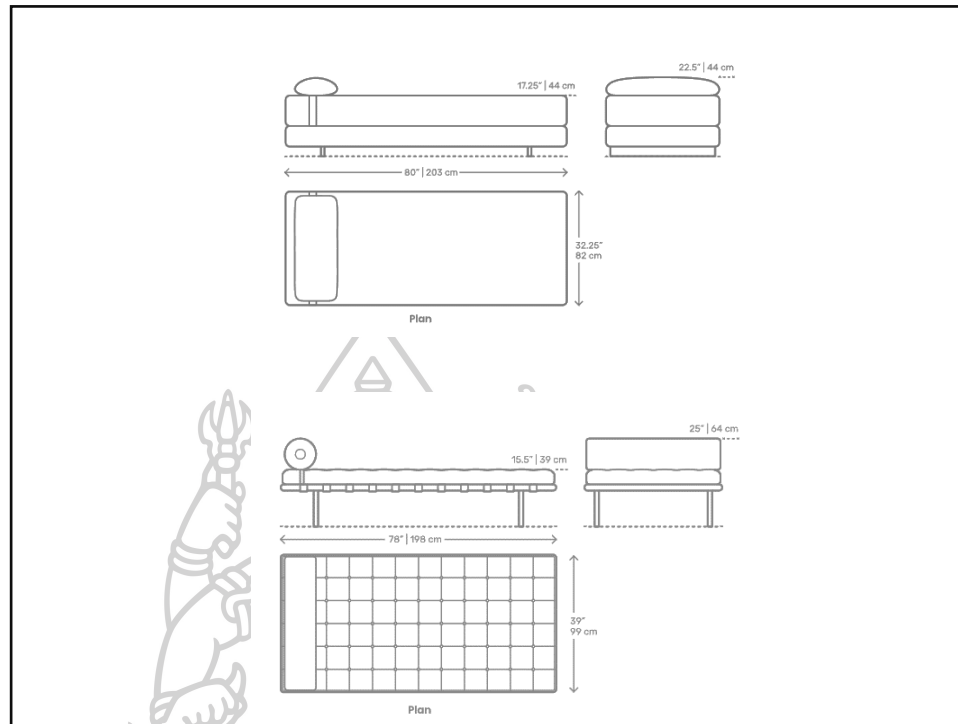


Figure 22 Stool or Ottoman size dimensions

The functionality of a space. The distinction between formal and informal layouts is essential in tailoring environments to specific needs.

Formal Seating Layouts emphasize order, elegance, and structure, and are suitable for corporate offices, formal dining rooms, and ceremonial spaces. They are characterized by symmetrical arrangements, fixed seating, and organized lines, and focus on functionality and decorum.

Casual Seating Layouts focus on comfort, flexibility, and relaxation. They are often found in homes and casual spaces and are characterized by a varied, often asymmetrical arrangement that encourages interaction and adaptability. These layouts create a relaxed atmosphere and support the dynamic use of space.








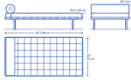
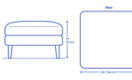
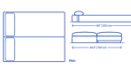

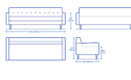
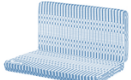






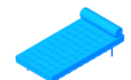

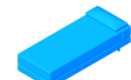

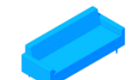
Understanding these principles helps designers create spaces that align with their intended tone and function, enhancing the user experience.



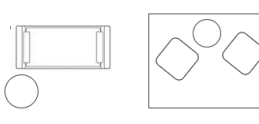

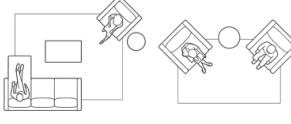
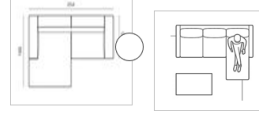
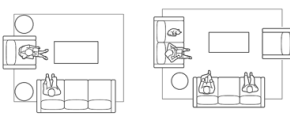
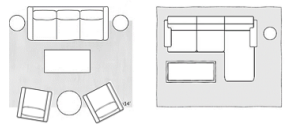
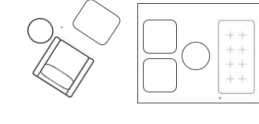
Table 7 Formal and Casual Layout Seatings

FORMAL SEATING LAYOUT		CASUAL SEATING LAYOUT	



Table 8 Mat, Krae, Tang, Yaeng Seating compared to Western Seating

1 MATS	2 KRAE	3.1 TAUNG BENCH	3.2 TAUNG BED	4.1 YAENG SEAT	4.2 YAENG BED
					
↓	↓	↓	↓	↓	↓
STANDARD INTERNATIONAL SEATING					
<ul style="list-style-type: none"> Sleeping pad Rug (Outdoor / Indoor) 	<ul style="list-style-type: none"> Day bed Bench (Outdoor) 	<ul style="list-style-type: none"> Bench Stool Ottoman (Indoor) 	<ul style="list-style-type: none"> Day bed Bench (Indoor) 	<ul style="list-style-type: none"> Armchair Easy Chair (Indoor) 	<ul style="list-style-type: none"> Sofa Sofa Bed (Indoor)
					
					
					

FORMAL SEATING LAYOUT	INFORMAL (SEMI) SEATING LAYOUT	CASUAL SEATING LAYOUT
<ul style="list-style-type: none"> Reception Areas Lobby Waiting Area Conference Rooms Offices Ceremonial Spaces 	<ul style="list-style-type: none"> Living Rooms Lounges Cafés Break Rooms Home Offices Outdoor Patios and Decks Recreational Areas 	<ul style="list-style-type: none"> Family Rooms Home Offices Open-Plan Living Areas Porches and Verandas Guest Room Bedroom
		
		
		

2.4 Ergonomic Theory

Definition The term ergonomics is a relatively common term these days. The general public hears it often, especially in product advertising, but may not understand its clear meaning. Even people who work at a high level professionally may not understand it properly. This term refers to people who use tools or equipment in their work, and how comfortable and suitable they are to work as efficiently as possible. Most workers often experience discomfort or inflexibility in their work, which is often due to various causes, such as the tool design, the work method determination, the work station and workplace design, and the unsuitable environment, etc.
Kitti Intranon (2010)

Pathama Senthong (2021) mentioned that the meaning of ergonomics, ergonomics is derived from two Greek words: ergon, meaning work, and nomos, meaning law. The Royal Institute Dictionary, B.E. 2542, explains the word “karn” as duty, activity, and work, while the word “science” means a system of knowledge. Therefore, when the two words are combined to form ergonomics, it means a system of knowledge about duty, activity, and work.

Mark S. Sanders and Ernest J. McCormick explain that ergonomics is a branch of engineering that deals with the relationship between people, machines, and the physical and mental work environment. The purpose of studying ergonomics is to enable workers to work comfortably, with less fatigue and excellent work results.

Sut Sri Burapha (2001) on the ergonomics of sitting and chairs, explained that sitting is “a posture in which the body weight is transferred to the support surfaces called the “sit bones” (ischial tuberosities) at the left and right hips, which are part of the pelvic bones and the soft tissues surrounding these two sit bones.” (cited from <http://ergo.human.comell.edu/DEA325 notes/sitting.htm>)

What is the definition of a chair?

A chair is “a product that is made so that people can sit on it”

A chair is “a support for people to sit on their buttocks, following the force of gravity.”

What is the difference between the words “chair” and “seat”?

Normally, when we use the word “chair” we mean a chair, a chair with a backrest and full legs. With the word “seat” we mean anything that people

can sit on, e.g. a tree trunk, a drinks crate, a round bench, a sofa, a bench, a bus stop stool, etc.

In everyday life, chairs are used for various activities, e.g. for working in the office, eating, studying and watching television. When sitting, the back muscles must work hard because the weight of the upper body is shifted to the hips and thighs. Prolonged sitting increases the pressure on the intervertebral disks (which cushion the impact between two vertebrae and are flexible). Additionally, gravity causes blood to pool in the legs and feet when sitting, slowing the return flow of blood to the heart. In this article, the author would like to introduce everyone to the correct sitting posture according to ergonomic principles.

Sut Sri Burapha (2001) mentioned that the theories of good sitting posture for the important theories of sitting posture, here we will mention 4 theories:

1. Original theory

The important criterion for consideration is the force acting on the joints of the spine. The correct sitting position is therefore to sit with a straight back at a 90-degree angle, as this minimizes the force acting on the joints of the spine. And this position is better than sitting with your back at an angle that is less than a right angle.

In the 19th century, many physiologists and osteopaths wrote textbooks on the correct sitting position, which they recommended to chair designers and furniture manufacturers, such as Grandjean (1969), Cromer and Robinette (1968), Keegan (1952), Shacharkov (1988), etc. The ideas of these experts can be summarized as follows: "Sitting with the body upright is the strongest and most complete sitting position", and this idea has prevailed to this day.

The shape of the human spine is extremely complicated. But in scientific and medical circles, it is now believed that sitting with a straight back is a position that makes the back stronger than other sitting positions.

2. Modified theory

The criterion for consideration is the force value on the back muscles (or EMG value: electromyogram). The correct sitting position is therefore sitting with a curved back at an angle of less than or more than 90 degrees. This reduces the pressure on the back muscles so that the EMG value is lower than when sitting with a straight back at a right angle to the thighs.

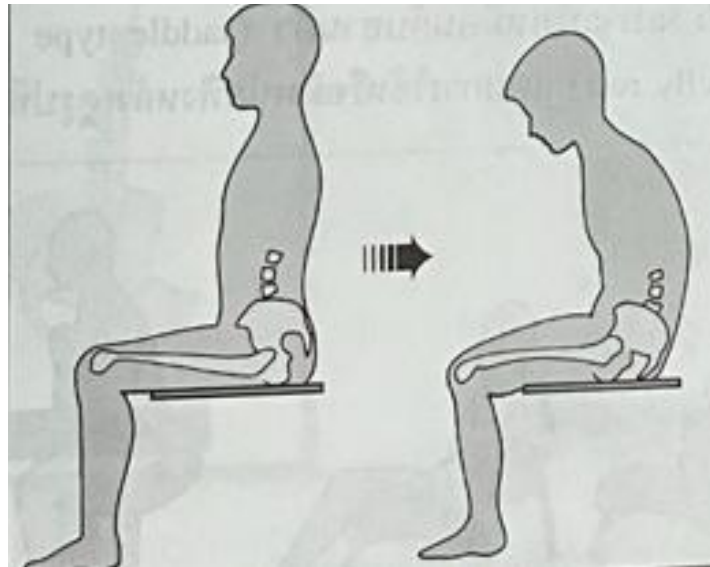


Figure 23 Sitting upright and at right angles to the thighs (left) compared to the slouch afterwards position (right)

3. Mandal's theory

Mandal's (1982) criterion is to consider the balance between muscle strength in the back and muscle strength at the front of the spine. The correct sitting position is therefore to sit with the hips at an angle of 117-132 degrees to the seat cushion. Research has shown that this sitting position is best for working at a computer.

Since the fasciae of the pelvis are connected to the muscles of the back and the thigh bones, the sitting position with the angle of the hip joint and the angle of the knee joint also affects the position of the pelvis and ultimately the curvature of the spine. In the sitting position with a hip joint angle that is much wider than a right angle, the pelvis, especially the sitting bones or ischial tuberosities (the protruding bones on either side of the pelvic bones that serve as a pivot point for the entire upper body), is bent forward. This position has the positive effect of bending the lumbar spine forward, which corresponds to the natural arrangement of the spine. Mandal's theory

therefore suggests sitting in such a way that the angle of the hip joint (opening of the hip angle) with the thigh is greater than a right angle.

4. Free posture theory

The criterion used for consideration is sitting in any position that the sitter finds comfortable, in which he does not feel uncomfortable and in which he has no back pain. The sitter can move their body to adjust their sitting position as required (dynamic sitting). This theory is widely considered to be more correct than all the other theories mentioned above.

There are currently many theories about health-promoting sitting postures at work that contradict the original theory. Some theories suggest innovative approaches to sitting and chair design, such as a semi-sitting position on a chair with a seat cushion raised at the front end, with or without a knee support pad. Some theories suggest sitting on a chair designed to provide saddle-shaped support and using an abdominal support rather than using or having a backrest.



Figure 24 Chair designed for semi-sitting

Most people tend to sit in the wrong posture, which can lead to discomfort and other health problems, such as back, neck, stomach and leg pain, eyestrain and abnormal movements. Proper posture in a well-designed ergonomic chair can reduce fatigue and discomfort and lower the risk of injury. The chair should be easily adjustable in height and other functions and should adapt to the sitter's body shape. The features of a good ergonomic chair include the following components:

Seat cushion, it must support almost the entire body weight. The material used for the cushion should be firm, at least 1 inch wider than the hips and thighs and slightly tilted forward. When sitting, the back of the knees should be 2-4 inches away from the edge of the chair to reduce pressure on the back of the thighs. The front edge of the seat should be rounded to reduce pressure on the knee joints.

Backrest, Since the backrest supports the back, it is very important. It should have a curve that supports the lower back and be large enough to support the upper and middle back. Using a lumbar support on the backrest can help to support the lumbar spine, reducing back pain and pressure on the intervertebral disks.

Chair Height, Adjust the chair so that both feet are flat on the floor when seated and the upper body is aligned with the device to be used, e.g. a computer screen or keyboard. A footrest is required for people whose feet do not reach the floor. If the chair has wheels, choose a model with five wheels so that it is easy to move and stable.

As well as choosing a suitable chair, safe sitting practices can help reduce discomfort and prevent injury. Avoid staying in one position for too long: alternate between sitting and standing. When sitting, make sure your hips are higher than your knees, both feet are flat on the floor and your weight is evenly distributed on the seat. Sit upright so that your back and shoulders are aligned with the backrest, relax your shoulders and rest your elbows and arms on the armrests.

It is important that you take breaks by standing, stretching and breathing deeply to improve circulation and reduce fatigue. Always pay attention to your posture. If your body is slouched, tilted or in an incorrect position, you should adjust it accordingly. Gradually adjusting your posture can improve your comfort and promote your health. Mary Rodts. (2019)

Ergonomic Chair, ergonomics comes from two Greek words: "ergon", which means work and the other word is nomos, which means laws of nature. Combined, this results in the word "ergonomics" or "law of work", which means the law of work, of working conditions. An ergonomic chair is a chair that is designed according to the principles of human ergonomics. It is designed to facilitate the adoption of a sitting position suitable for different body types and to reduce muscle fatigue caused by prolonged sitting. Ergonomic chairs are designed for people who have to work sitting down for long periods of time, i.e. people who work in offices. This is why it is often referred to as an "ergonomic office chair & ergonomic task chair". Nongnuch Klinpikul (2013)

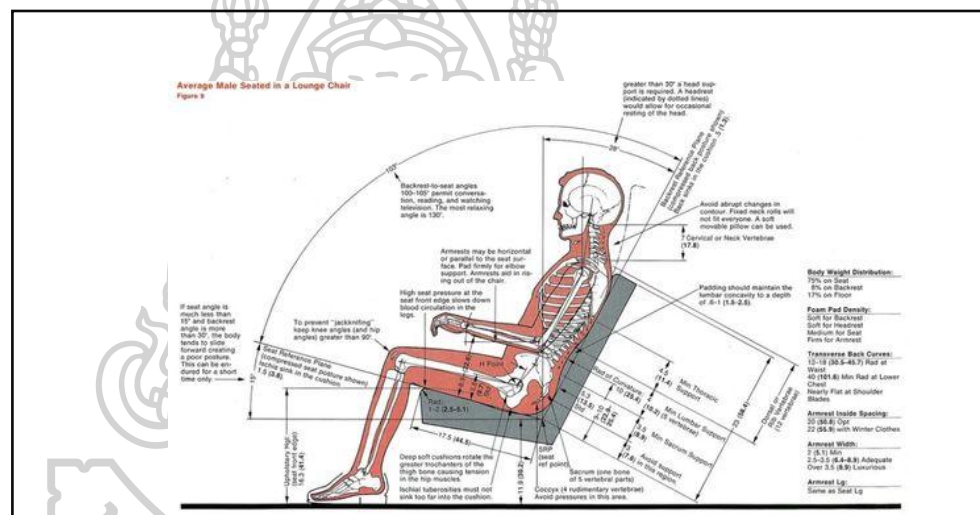


Figure 25 Ergonomics

Chalerm Siri Theppitak (2021) stated that the general principles of chair design. When designing chairs, the most important considerations are appropriate use, durability and comfort. Additionally, factors such as esthetics, design, weight and shape also play a significant role. Chairs should be designed according to their intended use. For example, dining chairs are usually equipped with a fixed or slightly adjustable backrest, which ensures that the user sits close to the table. In contrast, chairs designed for relaxing, such as living room chairs, often have a more inclined backrest for added comfort.

To ensure comfortable sitting, chairs should be designed to fit the body shape of the average user. The seat height must be carefully considered: If the seat is too high, the user's legs may dangle uncomfortably; if it is too low, excessive pressure may be exerted on the coccyx, commonly known as tailbone. The backrest not only has an esthetic function, but is also important to support the back and shoulders and thus reduce pressure on the seat.

2.5 Human Dimension Scale Theory

The human scale is the totality of physical qualities and quantities of information that characterize the human body, its motor, sensory or mental capacities and its social institutions. (Wikipedia, 2024)

Sataporn Deeboonmee Na Chum Phae (2008) stated that the proportions of chairs and physical characteristics. The comfort of using furniture depends on the proportions and sizes of the furniture in relation to the size of the user who can use the furniture effectively.

Modern furniture designers use standard proportions and sizes to help with design, for example chairs with proportions that most people can sit on comfortably.

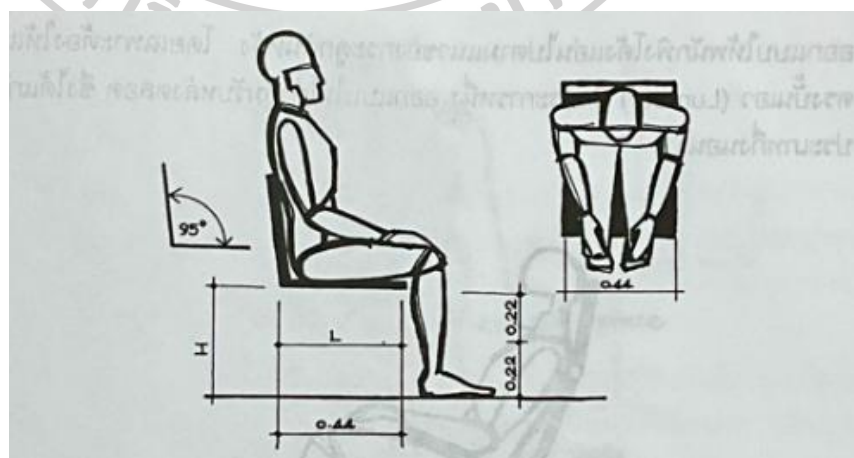


Figure 26 Human proportion visualization

If the head = 1 part, the height of the person is equal to 7.5 times the height of the head, e.g. if the person is 165 cm tall, then 1 part equals 22 cm. Here we see that a person sitting upright while working or eating

$H = 44$ cm, so $H + L = 88$ cm, the minimum angle of the backrest for this type of chair = 95 degrees

Design the backrest so that it curves along the spine, especially to support the waist (Lumber). Another point is to design it so that it supports the back all the time, which also applies to semi-reclining chairs.

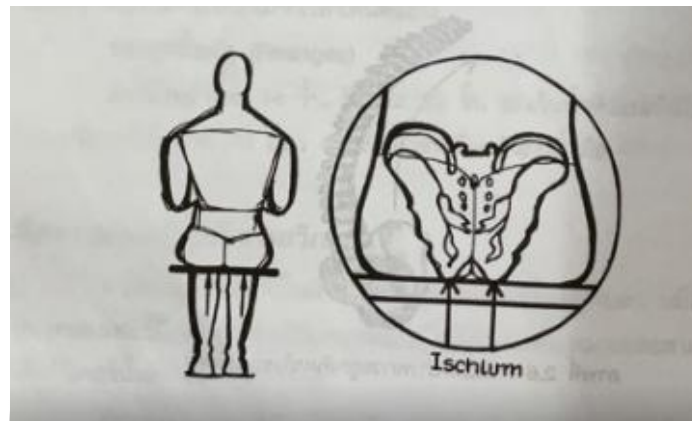


Figure 27 A visual representation of the weight-bearing part of the body in a sitting position, which is part of the pelvis and is called the “ischium”.

The image of a seat parallel to the horizontal level without a backrest. It can be sat comfortably enough, such as in the case of resting from the general fatigue of long periods of walking or standing. It is must for temporary rest breaks, e.g. on public chairs at bus stops etc. If you place the backrest at a 90-degree angle to the seat, you have to constantly tense your body when you lean on it. This causes the muscles to tire quickly and cause discomfort when sitting, especially in the lower back (lumber), which will ache.

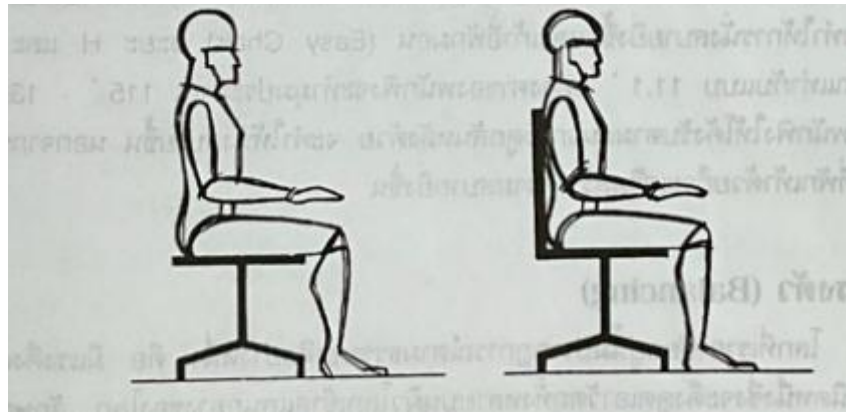


Figure 28 Visualization of a seat parallel to the horizontal plane without a backrest

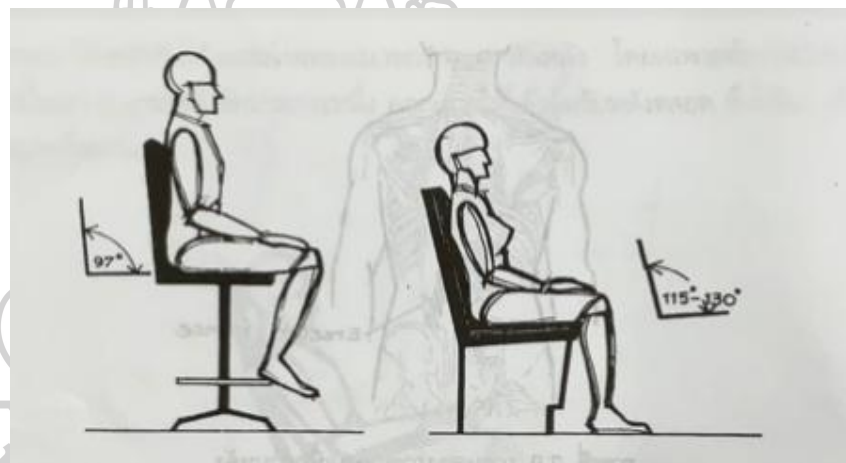


Figure 29 Showing images of sitting in the same chair

The backrest is inclined at an angle of 97 degrees to the seat, while the seat itself slopes at an angle of 3 degrees from parallel to the backrest. This design ensures comfort as the body weight naturally shifts to the backrest, which then supports the back and increases overall seating comfort. The Easy Chair has approximately the same H and L dimensions as the 11.1 degree model. However, the backrest of the Easy Chair is inclined and curved between 115 and 130 degrees to provide better support for the spine and further improve sitting comfort. A footrest can also increase comfort. For those designing easy chairs, Wood Magazine offers a valuable resource called "Must-Have Measurements for Comfortable Seating," which draws on industry guidelines to determine ideal measurements. (Well, ideal if you're 175 cm)

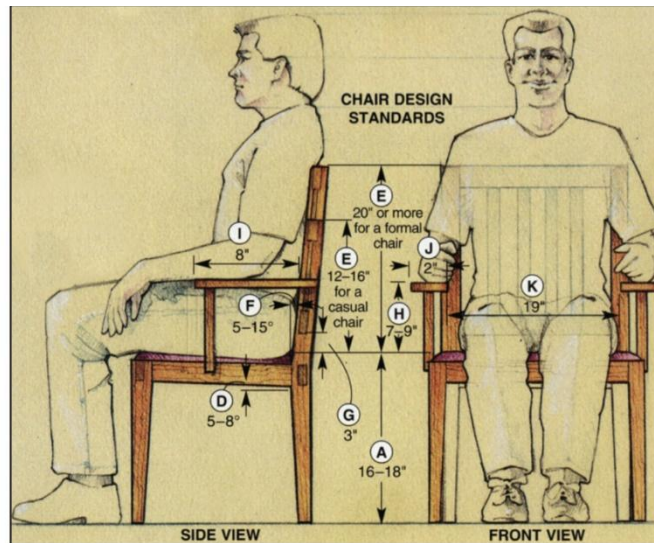


Figure 30 Seating dimension

In summary, the study of the dimensional scale of seating furniture reveals a critical intersection between ergonomic design, cultural traditions and practical usability. The dimensional scale of seating, which includes seat height, depth and width, plays a central role in ensuring comfort and functionality. Our analysis highlights the importance of aligning these dimensions with both contemporary needs and traditional practices, particularly in the context of Siamese cultural heritage.

By integrating traditional Siamese seating practices with modern ergonomic standards, designers can create seating solutions that honor cultural values while enhancing user comfort. The findings of this research argue for a balanced approach that considers both historical context and contemporary requirements to ensure that seating solutions are both functional and culturally responsive.

Future research should further explore this balance and how variations in seating dimensions affect user experience and cultural acceptance. This ongoing investigation will be critical to advancing design practices that respect traditional values while meeting modern ergonomic standards.

2.6 Case Study

The design of Thai seating is deeply rooted in the country's cultural heritage and reflects centuries-old traditions, social customs and the local environment. Thai seating furniture, characterized by its unique forms, materials and artisanry, offers an insight into the lifestyle and values of Thai society. This case study examines the evolution of Thai seating and shows how traditional designs have adapted to modern needs without losing their cultural significance.

In Thailand, seating furniture has always emphasized sitting on the floor, which is evident in the use of items like reed mats, cushions and low platforms. These designs reflect a connection to the natural environment and promote a lifestyle of simplicity, humility and earthiness. However, with the influence of Western interior design styles and changing social dynamics, Thai seating has changed dramatically.

This case study looks at the core elements of Thai seating design, such as the materials used, the ergonomic considerations and the aesthetic principles involved in making these pieces. By analysing key examples of traditional and contemporary Thai seating, the study aims to demonstrate the balance between preserving cultural identity and embracing modern innovation in design. Through this investigation, we gain insight into how Thai designers honour their cultural heritage while catering to the changing needs and preferences of contemporary users.

Phu (2020) Leather Bench Not a “Bed” Inspiration. In 2020, Lasunya wanted to create a masterpiece with two requirements: 1) If this piece is in the house, it must immediately make the house perfect. And 2) It must be a Thai craft that can be showcased on the world stage. We were determined to bring out the best potential, so we set out to find a designer who shared our vision. Out of more than 10 designers, only one remained: Mr. Phu from Proud Design, a famous designer who designed the Khiao Khai Ka restaurant and received an award from the World Architecture Festival 2019 in the Netherlands, the best architectural design festival in the world. We also invited a world-class leather company, Sorensen, to participate in this project.

(Sorensen is a Danish leather tannery that has been chosen by legendary designers like Fritz Hansen and Finn Juhl and is still one of the world-class leather tanners today) And finally, our inspiration came from a 'bed'.



Figure 31 Not “Krae” Inspiration

The combination of Thai art like “Krae” with Thai handicrafts creates immortal art and handicrafts suitable for the present, even if many hundreds of years have passed.

.

“Krae” from “Praneat” collection

.

"Leather" by Sorensen entitled Triumph Crib 5, which has the highest fire resistance

"Thai teak" is selected; this teak wood is gilded to create golden splinters

"Organic para-rubber"

The Kanok sewing pattern is then created by Lasunya's seamstress on this leather; this pattern must be “clean” and flawless. Phu (2020)



Figure 32 Not "Krae" Inspiration

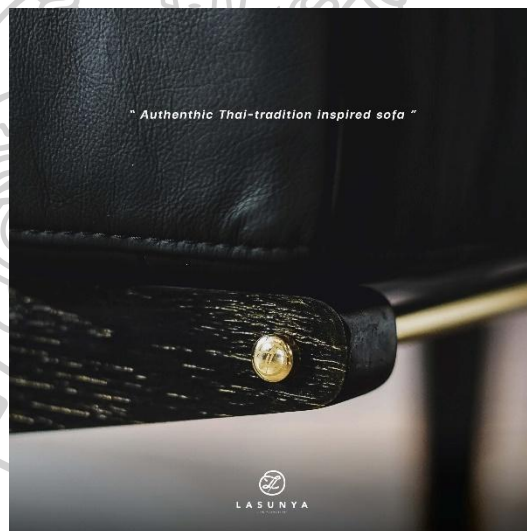


Figure 33 Not "Krae" Inspiration

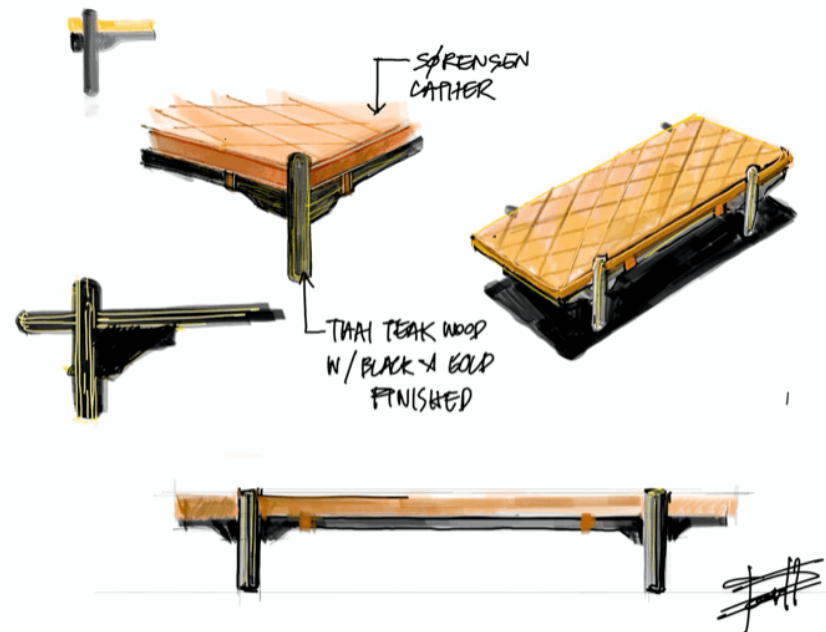


Figure 34 Not “Krae” Inspiration

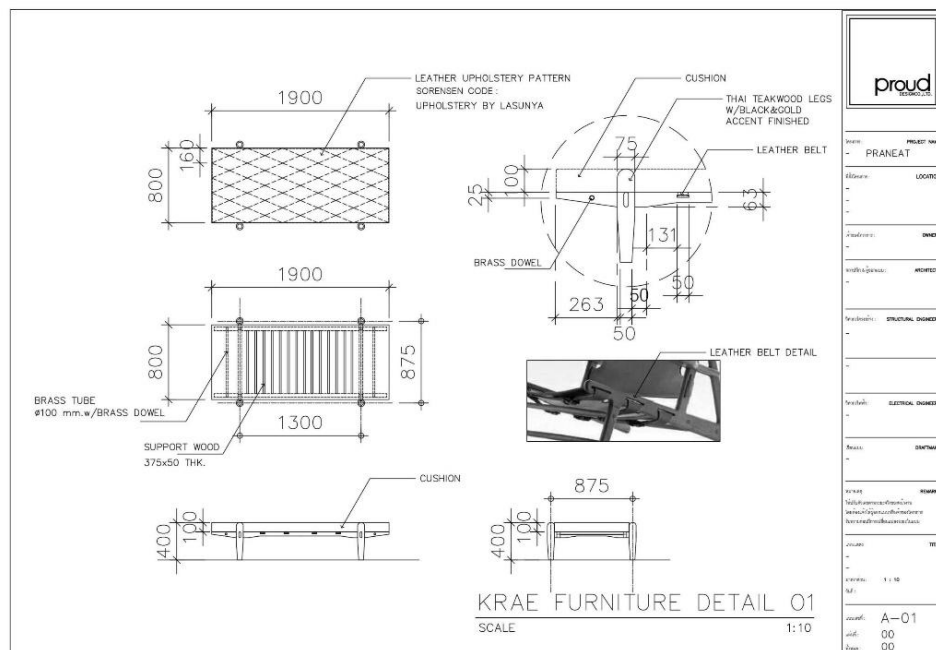


Figure 35 Not “Krae” Inspiration

The Chairmen of Thai Design, (2018) mentions that At Supornchai, a freelance designer who has worked with several leading Thai furniture brands, is the creator of Kiri, a contemporary sofa design that won Singapore's Furniture Design Award (FDA) in 2017 and is manufactured by the Mobella brand. This is another piece that creates an interesting new experience for contemporary lifestyles.



Figure 36 Kiri sofa design

The collection includes a long sofa and a small bench that can be assembled in diverse ways and are suitable for both living and dining areas. The bench structure is made of oak wood and covered with water-repellent fabric, making it suitable for outdoor use, which fits well in the open tropical architecture of traditional Thai homes. It is clear that even though the era has changed, the Thai lifestyle still meets the needs but has been given a more modern look.



Figure 37 Kiri sofa design

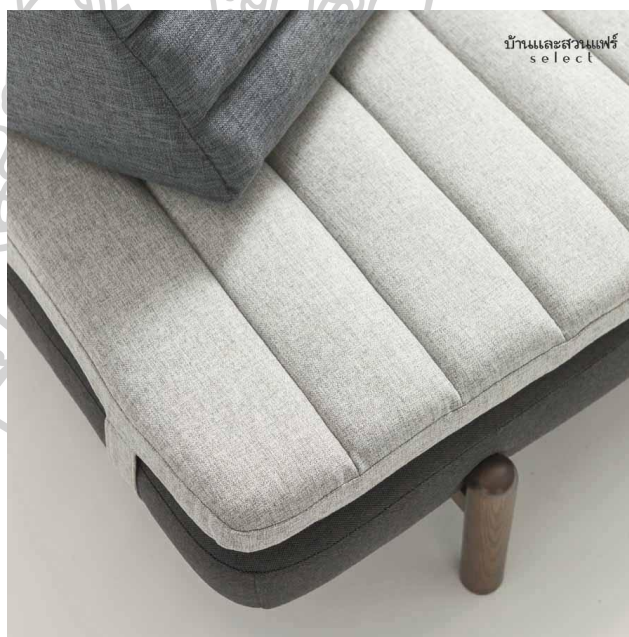


Figure 38 Kiri sofa design

The renowned upholstered furniture brand Mobella transforms groundbreaking design into a functional work of art. The brand not only offers an exclusive, bespoke service, but is also known for its unique designs and high-quality fabrics.



Figure 39 Upholstered modern furniture with the best of Thai craftsmanship and materials



Figure 40 Upholstered modern furniture with the best of Thai craftsmanship and materials

Mobella (2012): Mobella was founded in 1992 and has since gained an excellent reputation for its styles and fabrics not only in Thailand, but also in Japan and Europe. The Thai-born upholstered furniture manufacturer offers a

custom-made service for style-conscious homeowners with its collection of sofas, armchairs, beds and home accessories.

Under the direction of award-winning designer Anuphon Yooyuen, Mobella's in-house designers are known for their creative spirit that combines modernized Thai elements with international design standards.

The irresistible charm of this chair lies in how beautifully the expanding and knotting technique is applied, from the core of the bamboo to the details. The shape tempts you to touch it and search for its deeper meaning. Sophistication and attention to detail are the true charm of the Asian lifestyle.



Figure 41 Ra Dee - bamboo lounge chair

The product aims to present contemporary design and Asian wisdom by developing a contemporary and charming style in a classic contemporary style, emphasizing the excellent features of the materials in a different perspective. Designers: Amorntep Kachanon and Panasit Pimchan. Demark (2020)



Figure 42 Ra-dee bench collection



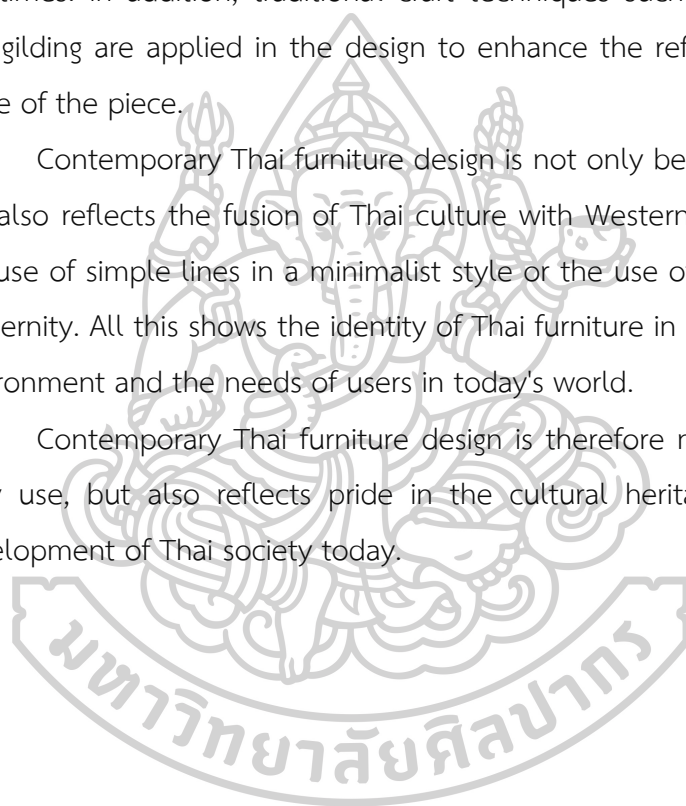
Figure 43 Ra-dee bench collection

Contemporary Thai furniture design combines the beauty of traditional Thai art and culture with the changing needs and trends of today. This furniture not only emphasizes beauty, but also has a function that corresponds to the changing lifestyle of Thais today.

Contemporary Thai furniture design often uses durable and environmentally friendly materials such as wood, rattan or Thai silk, which are a continuation and representation of Thai identity in a form appropriate to the times. In addition, traditional craft techniques such as weaving, carving and gilding are applied in the design to enhance the refinement and artistic value of the piece.

Contemporary Thai furniture design is not only beautiful and practical, but also reflects the fusion of Thai culture with Western influences, such as the use of simple lines in a minimalist style or the use of colors that express modernity. All this shows the identity of Thai furniture in a form that suits the environment and the needs of users in today's world.

Contemporary Thai furniture design is therefore not only in line with daily use, but also reflects pride in the cultural heritage and continuous development of Thai society today.



CHAPTER 3

RESEARCH METHODOLOGY

This research is based on a qualitative methodology utilizing a wide range of data collection techniques, including literature review, field research, observation, surveys, site visits, interviews, experiments, and document analysis. Each method was strategically selected to capture different perspectives and provide a holistic understanding of the phenomenon under study. By focusing on people who use public seating, nuanced insights into their experiences, behaviors and preferences are to be gained.

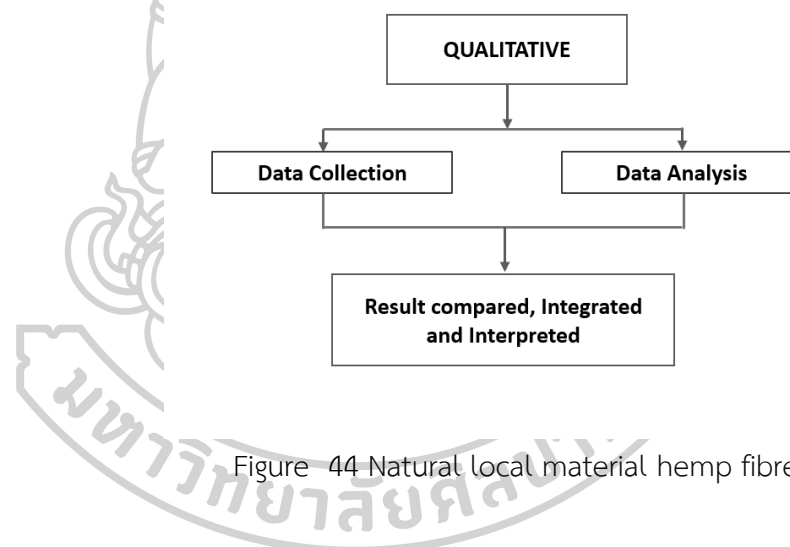


Figure 44 Natural local material hemp fibre.

This approach not only enriches the depth of the results, but also ensures that the data collected reflects the complex social and cultural contexts in which public seating is used, both indoors and outdoors. The integration of these different methods allows for robust analysis and provides a well-rounded exploration of the topic.

Research Methodology

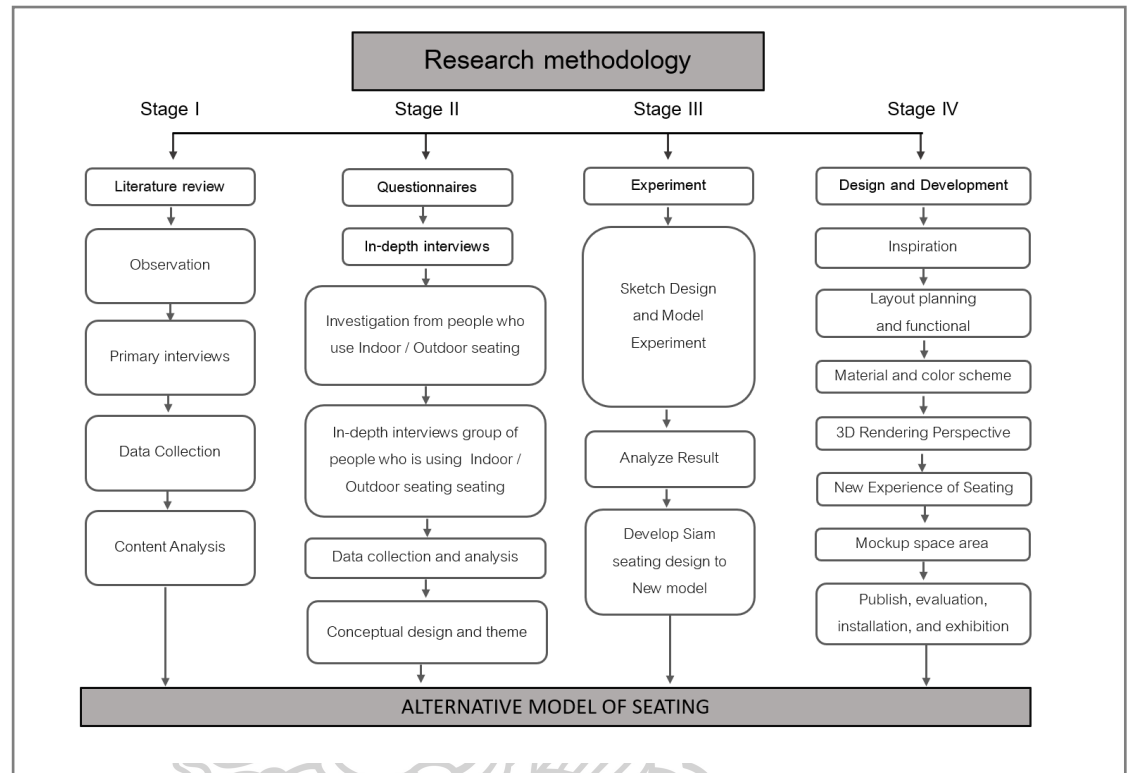


Figure 45 Research Methodology

Stages of study

Step 1: Data Collection

Data were collected by reviewing literature from research studies, books, journals, articles, related documents from the internet, observation, and preliminary interviews. and content analysis

Step 2: Questionnaire and in-depth interview

Collect data (field) to study a sample population using public chairs by conducting in-depth interviews, by conducting surveys and interviews, by creating questionnaires. Collect and analyse data to formulate ideas and conceptual models.

Step 3: Pre-print testing

Processing the data obtained to summarize and analyse it, and to test different designs for public seating, with sketches 3D imaging small model making.

Stage 4: Design and development

The result is a planned layout of design, function, material form and perspective. 3D renderings, mock-up layouts for publication, evaluation, installation and exhibition.

Qualitative approach

The researcher used in-depth interviews. (In-depth interviews) focusing on people who use public seating by conducting in-depth interviews with relevant people, i.e. people who use public seating 4 cases.

In qualitative research, researchers have developed research instruments. It contains questions for in-depth interviews. On the topic of

1. Posture/behavior when sitting
2. Function

in-depth interviews. (In-depth interviews) focusing on people who use public seating by conducting in-depth interviews with people who use public seating 4 cases.

Table 9 lin-depth interviews. (in-depth interview) focusing on 4 cases of people who use public seating.

NO.	NAME	CONCLUSION
1.	Ms. Wasana Pintakupt	Behavior when sitting on Indoor public chairs at IconSiam. Mostly, I use it to rest when walking and getting tired. Sometimes I sit and eat food bought from a shop in the basement and often watch YouTube. I want a comfortable chair, a place to charge my battery, and a place to put snacks or cups.
2.	Mr. Thitiphan Kaewsri	Behavior when sitting in Indoor public chairs at Icon Siam mall, usually sitting and waiting for friends when meeting up. Mostly using the phone to play games or call friends. If asking about the function of the waiting chair, wanting a backrest because sometimes have to sit and wait for a long time. If there is a place to charge the battery, it would be good.

Table 10 in-depth interviews. (in-depth interview) focusing on people who used public seating by using in-depth interviews with People who used public seating 4 cases.

NO.	NAME	CONCLUSION
3.	Ms. Kesara Maithong	Behavior when sitting on a public chair in IconSiam is to sit and rest after walking for a long time, sit and wait for my child to buy something, sometimes I will look at my phone or talk to a friend on the phone. Most of the time, I like to sit outside to rest and get some air. I want a place to put my things or a place to put my cup. I like to sit and read Line while waiting. I want the seat to not be too hard because sometimes I get tired.

Table 11 In-depth interviews focusing on 4 cases of people who use public seating.

NO.	NAME	CONCLUSION
4.	Mr. Phano Bunnam	Behavior when sitting on public chairs in IconSiam shopping mall, most people come to buy food downstairs and then sit and wait for their children to walk outside to buy things, get some fresh air, and enjoy the view. They want more seats because there aren't many places to sit. Mostly foreigners sit there. Sometimes they buy tea, coffee, or food and then they come and sit and wait. They want to be easily seen so that when their children, friends, or lovers come, it will be an easy place to meet.

As part of the survey methodology, the author extended the study beyond public benches to encompass a wide range of public seating across various environments. This approach was designed to provide a more nuanced understanding of user sitting behaviors and needs. The example presented below illustrates public seating within an indoor space, offering insight into how design and context shape user interactions with these areas.



Figure 46 Public seating in semi indoor-outdoor

In surveying various public seating locations to understand the needs of users and the sitting conditions in these locations, it was found that certain behaviors indicate discomfort or dissatisfaction with the seating. The example figures above show a public waiting area in a hospital. Here, users exhibit various sitting behaviors, such as leaning, stretching out their feet or waiting for long periods of time. In some cases, users need to use the public seats to eat or accommodate a wheelchair for a patient. However, most of these seats are uncomfortable and lead to boredom, stress and fatigue for users who have to wait a long time. It may be necessary to improve or redesign the seats to make them more comfortable and suitable for different situations.

In a study of public seating in shopping centers, the seating is tested for comfort, functionality and esthetics. This includes observing user behavior, identifying general seating preferences and understanding how these spaces are used for various activities such as resting, socializing and waiting.



Figure 47 Public seating in shopping mall



Figure 48 Public seating in shopping mall



Figure 49 Public seating in shopping mall

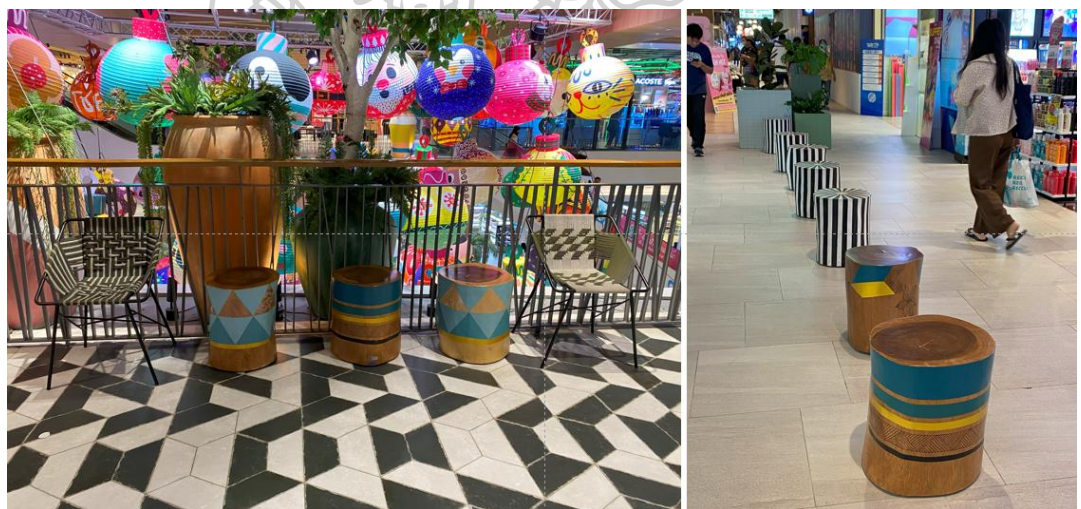


Figure 50 Public seating in shopping mall



Figure 51 Public seating in shopping mall



Figure 52 Public seating in shopping mall

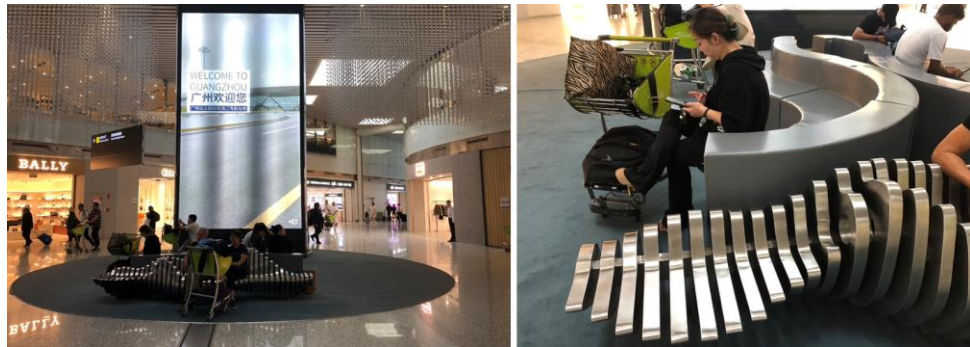


Figure 53 Public seating in shopping mall

When examining the seating in shopping malls, it was found that these seats are often more comfortable and esthetically pleasing than other public seating. They are usually made of high-quality materials and are designed to perfectly match the atmosphere and interior design of the shopping center. To meet the needs of different users, shopping mall seating is also often equipped with charging stations or power sources. This allows users to charge and use their phones at any time, which is extremely convenient for guests while waiting or relaxing. However, shopping centers are constantly developing and improving these facilities to meet the changing needs and convenience of customers in an age where technology plays a crucial role in everyday life.

CHAPTER 4

DESIGN DEVELOPMENT

This chapter focuses on the design development phase, in which theoretical frameworks and research findings are translated into feasible design concepts. It examines the process of developing innovative seating solutions that bridge the gap between traditional Siamese seating practices and modern ergonomic requirements. The development process is divided into the following sections:

Design Develop Diagram

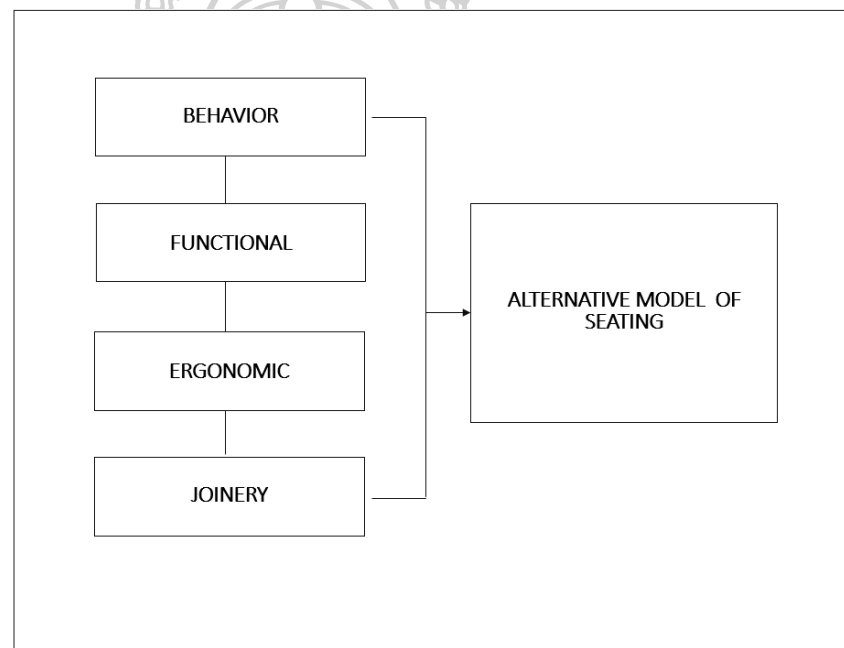


Figure 54 Design Develop Diagram

Source: Rutairat Prayoonhong (2024)

4.1 Behavior

In this analysis, the sitting behavior of Thai people is examined to obtain a function that is consistent with the culture and physical needs of users in Thai society. Various factors that influence seating behavior, such as preferred seating positions, desired comfort, and the social meanings associated with these behaviors, are examined and evaluated in detail to

obtain results that can be applied in designing seating that meets the needs of modern Thais in both private and public spaces.

Table 12 Summary of seating behavior

TABLE OF SEATING BEHAVIOUR			
Waiting	Reading	Using Electronic Devices	Drinking
Resting	Laying	Listening to Music or Podcasts	Eating or Snacking
Relaxing	Nap	Calling	Talking

Analyzing the functionality of seating to support Thai people's behavior is an important process in developing furniture that meets the actual needs of users in Thai society. Sitting is not only about resting, but also has a profound cultural and social significance. An appropriate seating design must consider various factors such as popular seating positions in daily life of Thai people, comfort that aligns with human ergonomics, beauty that reflects Thai cultural identity, and sustainability that is compatible with the environment and local culture. This analysis process will consider current and past lifestyles as well as elements that encourage Thai people's sitting behavior. The results will help develop seats that are not only comfortable but also have functions that respond to a variety of behaviors and uses.

Table 13 Summary of seating function

TABLE OF SEATING FUNCTION			
Stand out	Lighting	Electronic Support	Accent Table
Multifunction	Durability	Technology	Easy for Cleaning
Comfort	Flexible	Private Space	Gathering

The analysis of seating behaviors highlights the various functions that seating must support depending on the activity:

Short-term activities like waiting or talking on the phone require seating that provides moderate comfort and support for the back but does not necessarily need to have advanced ergonomic features. These seats are designed for temporary use.

Longer-term activities such as reading or using electronic devices require seating furniture with ergonomic properties. Adjustable seats, lumbar support and armrests are essential to ensure good posture and comfort during prolonged use.

To relax and rest, including resting, reclining or napping, you need seating that is designed for whole-body comfort. Reclining features, soft materials and upholstered surfaces are key to providing users with the support they need to fully relax or sleep.

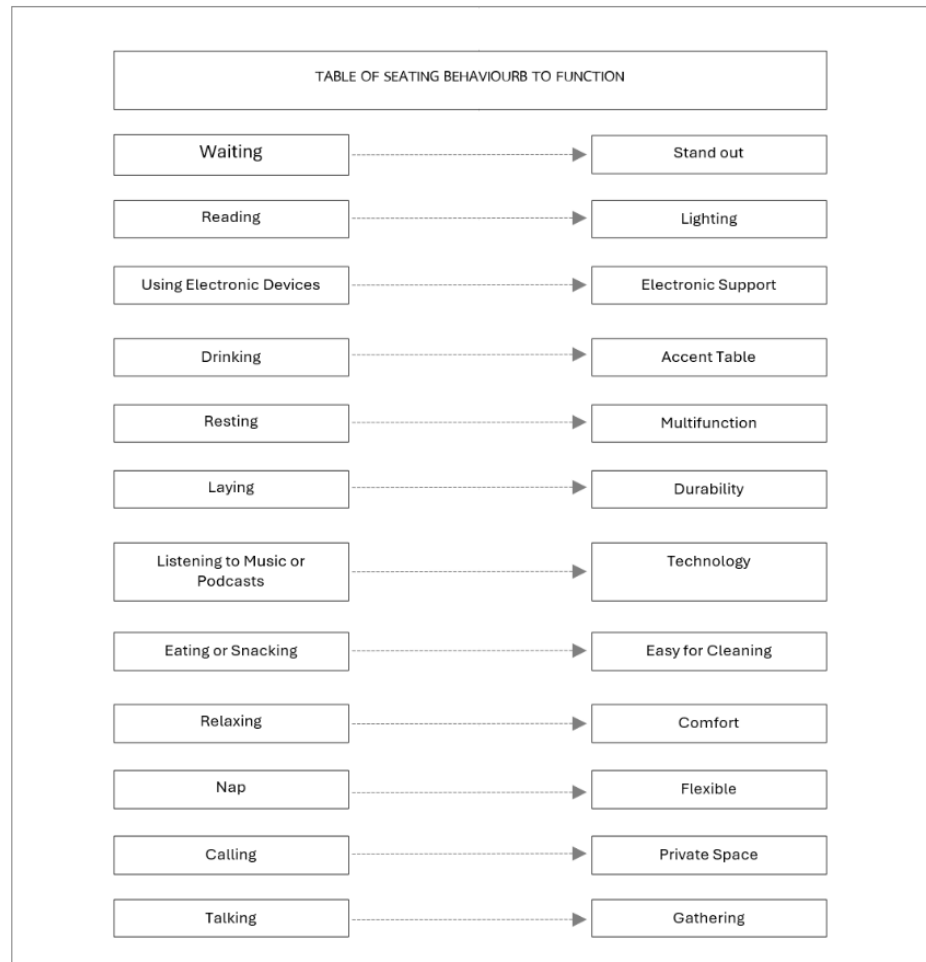
Social interactions like conversations or drinking are best supported by seating that allows users to sit comfortably facing each other, with a moderate backrest and armrests. These seats are often arranged to encourage conversation and easy access to side tables.

In summary, seating should be adapted to specific behaviors, with ergonomics and comfort adjusted according to the duration and type of activity.

Table 14 Summary of Seating Behavior to Function

Seating Behavior	Function	Required Support/Features
Waiting	Provides temporary seating for short durations in public or private spaces	Comfort with moderate back support, often modular for flexible use
Reading	Encourages focus and comfort for extended periods of sitting	Ergonomic back support, armrests, adjustable seating for posture
Using Electronic Devices	Supports activities requiring focus and hand use (typing, holding devices)	Lumbar support, armrests, inclined seating, screen height consideration
Drinking	Provides a stable, relaxed seating arrangement for casual socializing or brief breaks	Comfortable seating, side tables for placing drinks, armrests
Resting	Allows relaxation and unwinding, typically in informal settings	Reclining backrest, soft cushions, footrests, head support
Laying	Provides full-body support for rest or sleep	Fully reclining feature, extended surface (like lounge chairs), padding
Listening to Music	Enhances relaxation, potentially with a focus on comfort and immersion	Reclining backrest, cushions, possibly integrated sound systems
Eating or Snacking	Supports casual dining or snacking experiences	Moderate back support, easy to clean, access to tables
Relaxing	Offers a tranquil experience, allowing users to destress	Reclining features, soft materials, possibly rocking or motion options
Nap	Full-body rest and support for temporary sleeping	Reclining or laying seating, pillows, cushioned surfaces
Calling	Provides moderate comfort while users engage in phone conversations	Simple seating with back support, armrests optional
Talking	Encourages interaction in social settings, supporting casual or formal conversations	Seating arranged in a circle or facing, with armrests for comfort

Table 15 Summary of Seating Behavior to Function



In summary, seating should be carefully matched to specific behaviors, with ergonomic and comfort features carefully tailored to the duration, purpose and type of activity. For shorter, time-limited activities such as waiting or telephoning, seating can be primarily practical and easy to use, offering moderate comfort with minimal ergonomic complexity. These seats should be easily accessible and support the user for short periods of time without compromising their posture.

Ultimately, the best seating solutions are those that seamlessly combine form and function, providing the user with comfort, ergonomic support and an inviting space for their activities. Designers must consider the diversity of human behaviors and interactions to create seating that enriches daily life, whether in public spaces, at work or at home.

Testing the layout of the Alternative Seating model against western Layout standards is a crucial step in developing seating that meets the requirements of functionality, comfort, esthetics, and identity, and meets the different seating behaviors of Thai people in various environments, including formal, semi-formal and casual sitting, as follows:

Functionality:

Accessibility and Usability: Test whether the seating is easily accessible and usable in different contexts, such as for meetings, ceremonies or relaxation.

Adaptability: Check whether the seating can be adapted or modified for different purposes.

Comfort:

Ergonomic Support: Evaluate seating comfort by considering ergonomic support and the reduction of fatigue or discomfort.

Maintenance: Check how easy it is to clean and maintain the materials used.

Esthetics and Identity:

Cultural Reflection: Test whether the design of the seating furniture reflects the cultural identity and esthetics of Thailand.

Integration into the Décor: Assess how well the seating blends in with the interior design and other colors/materials used.

Behavioral Fit:

Positioning and Arrangement: test the suitability of the seating arrangement in different areas, such as meeting rooms, work areas or relaxation zones.

Response to Seating Behavior: Assess how well the seating accommodates different seating behaviors, such as group seating, individual seating or casual lounging. Testing in each area ensures that the seating developed is comprehensive in all dimensions and effectively meets the needs of the user.

4.2 Experiment and Design develop

The experiment of the height levels of mats, Krae, Tang and Yaeng is crucial for determining the proportions for the next stage of the design.

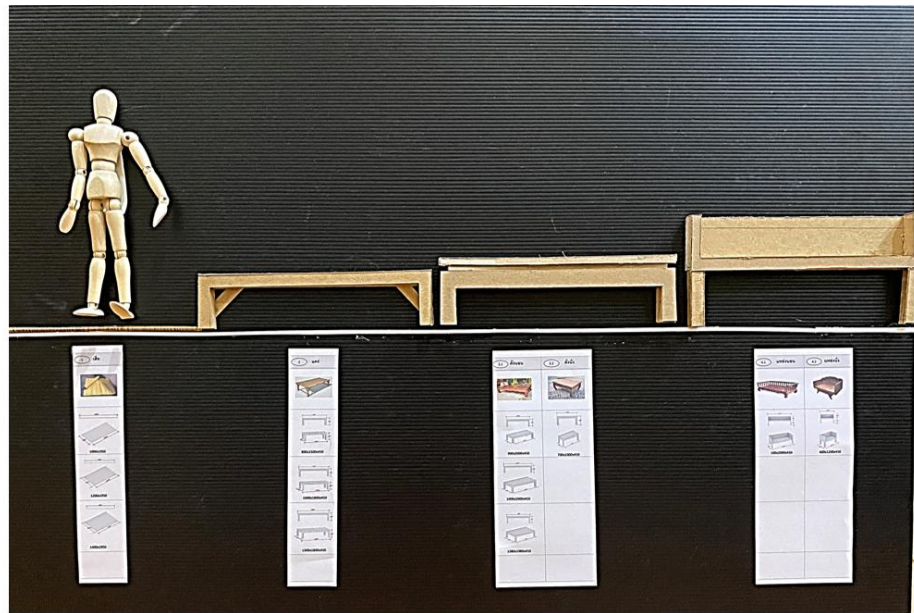
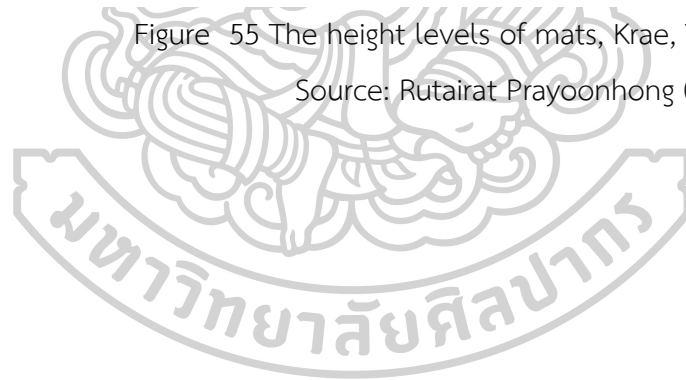


Figure 55 The height levels of mats, Krae, Tang, and Yaeng

Source: Rutairat Prayoonhong (2024)



Design Develop Diagram

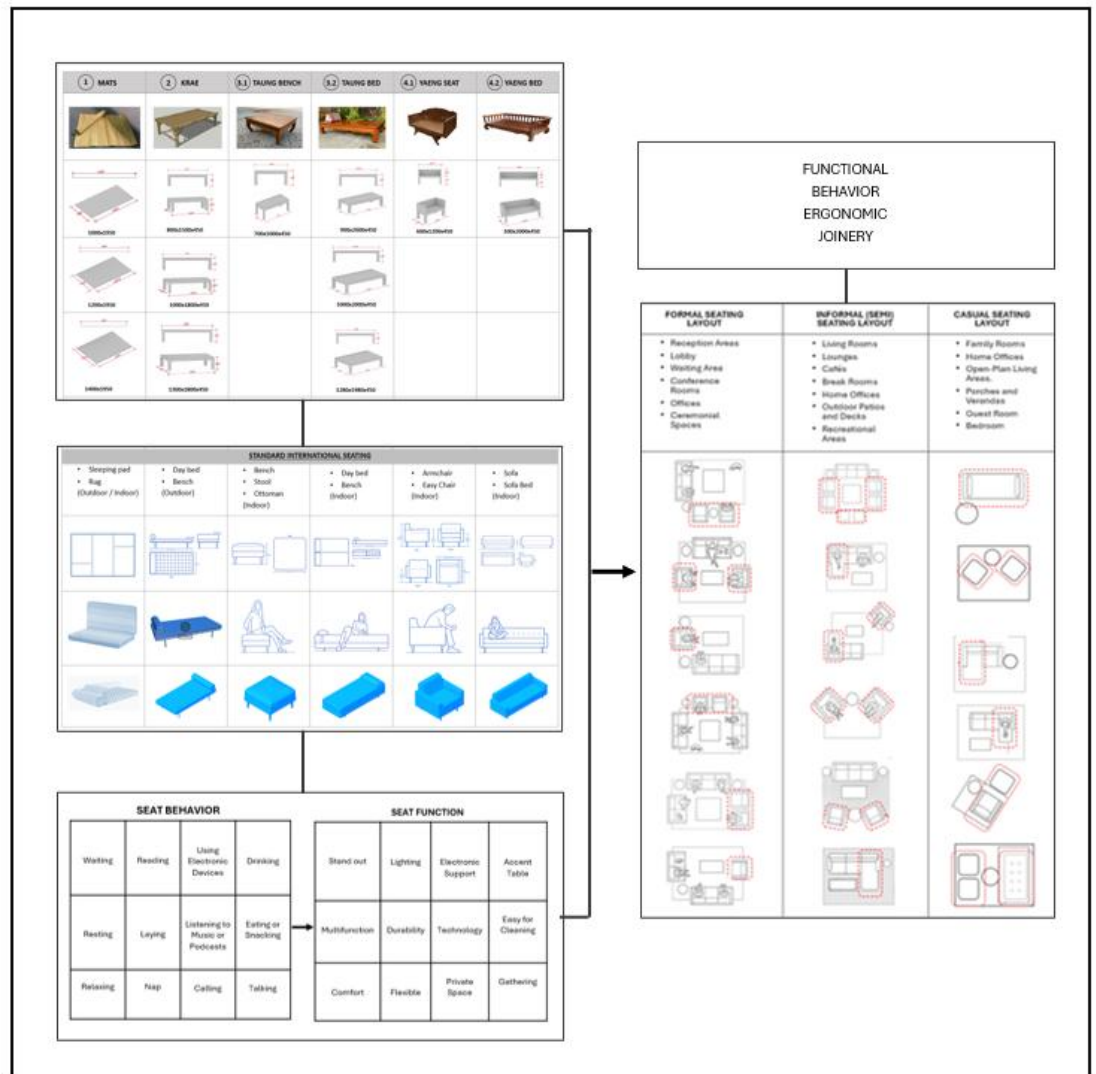
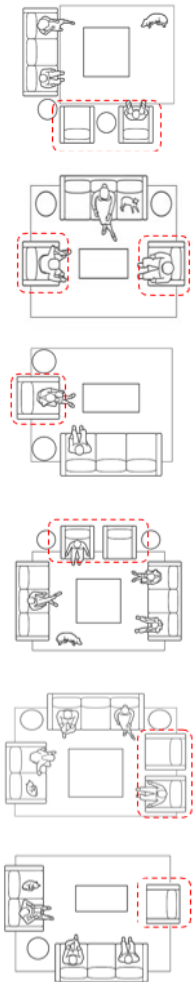
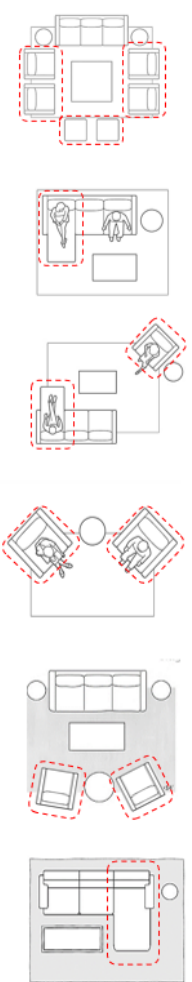
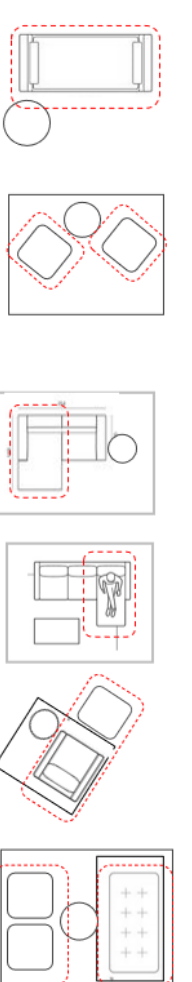


Figure 56 Design develop Diagram

Table 16 The table Mats, Krae, Tang, Yaeng seating comparison with western seating

FORMAL SEATING LAYOUT	INFORMAL (SEMI) SEATING LAYOUT	CASUAL SEATING LAYOUT
<ul style="list-style-type: none"> • Reception Areas • Lobby • Waiting Area • Conference Rooms • Offices • Ceremonial Spaces 	<ul style="list-style-type: none"> • Living Rooms • Lounges • Cafés • Break Rooms • Home Offices • Outdoor Patios and Decks • Recreational Areas 	<ul style="list-style-type: none"> • Family Rooms • Home Offices • Open-Plan Living Areas. • Porches and Verandas • Guest Room • Bedroom
		

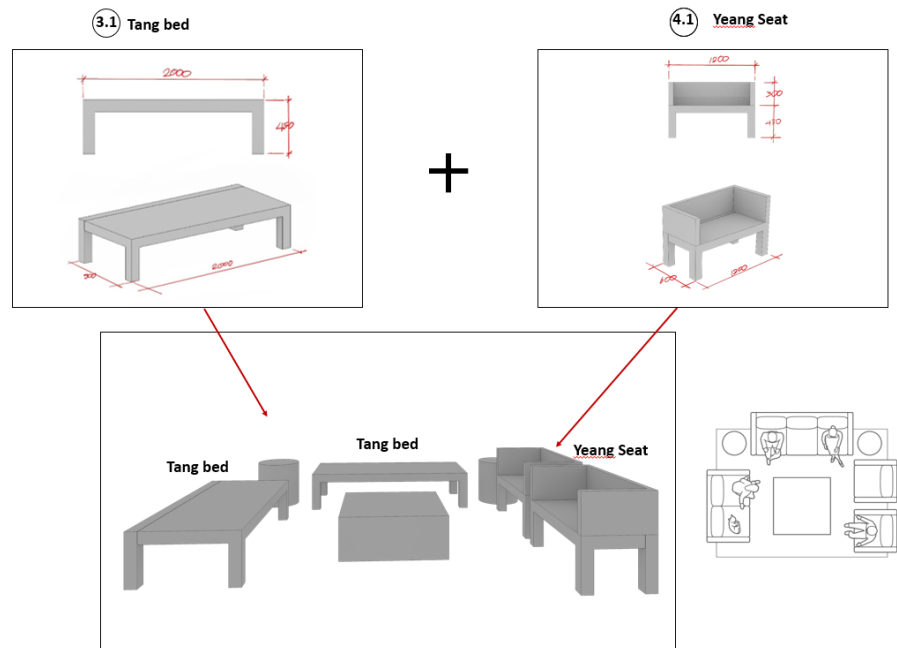


Figure 57 Combined Siam seat and Western seating to development

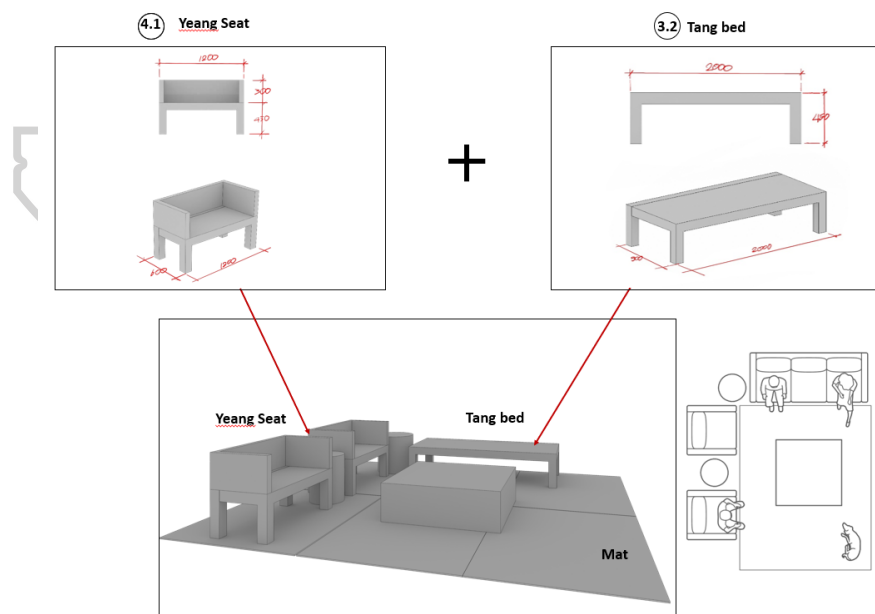


Figure 58 Combined Siam seat and Western seating to development

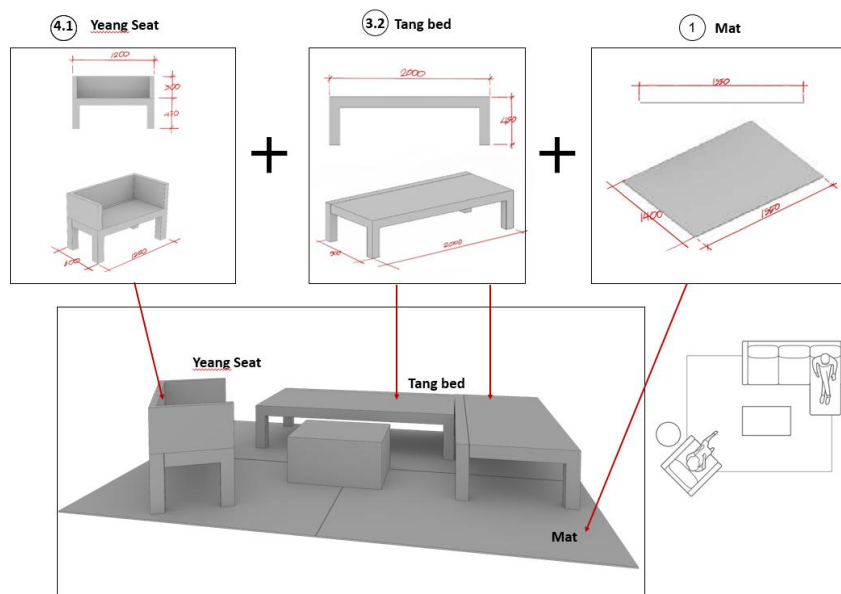


Figure 59 Combined Siam seat and Western seating to development

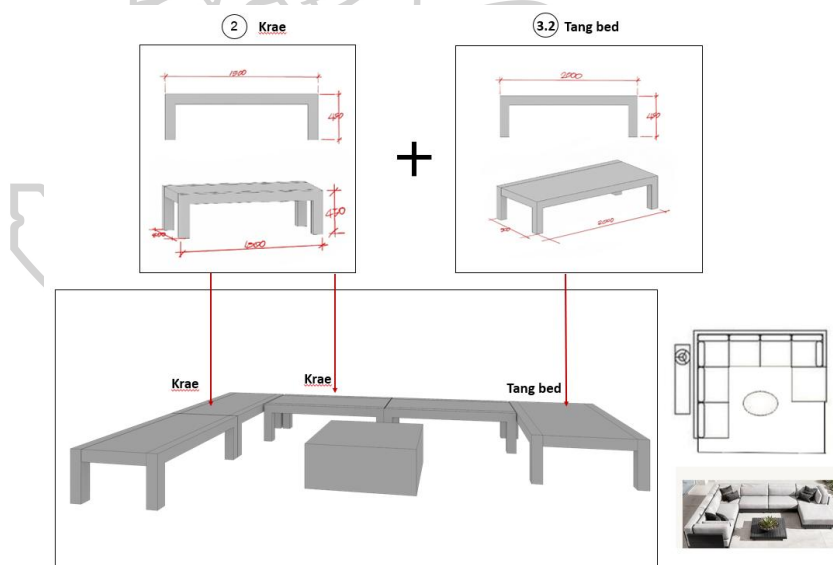


Figure 60 Combined Siam seat and Western seating to development

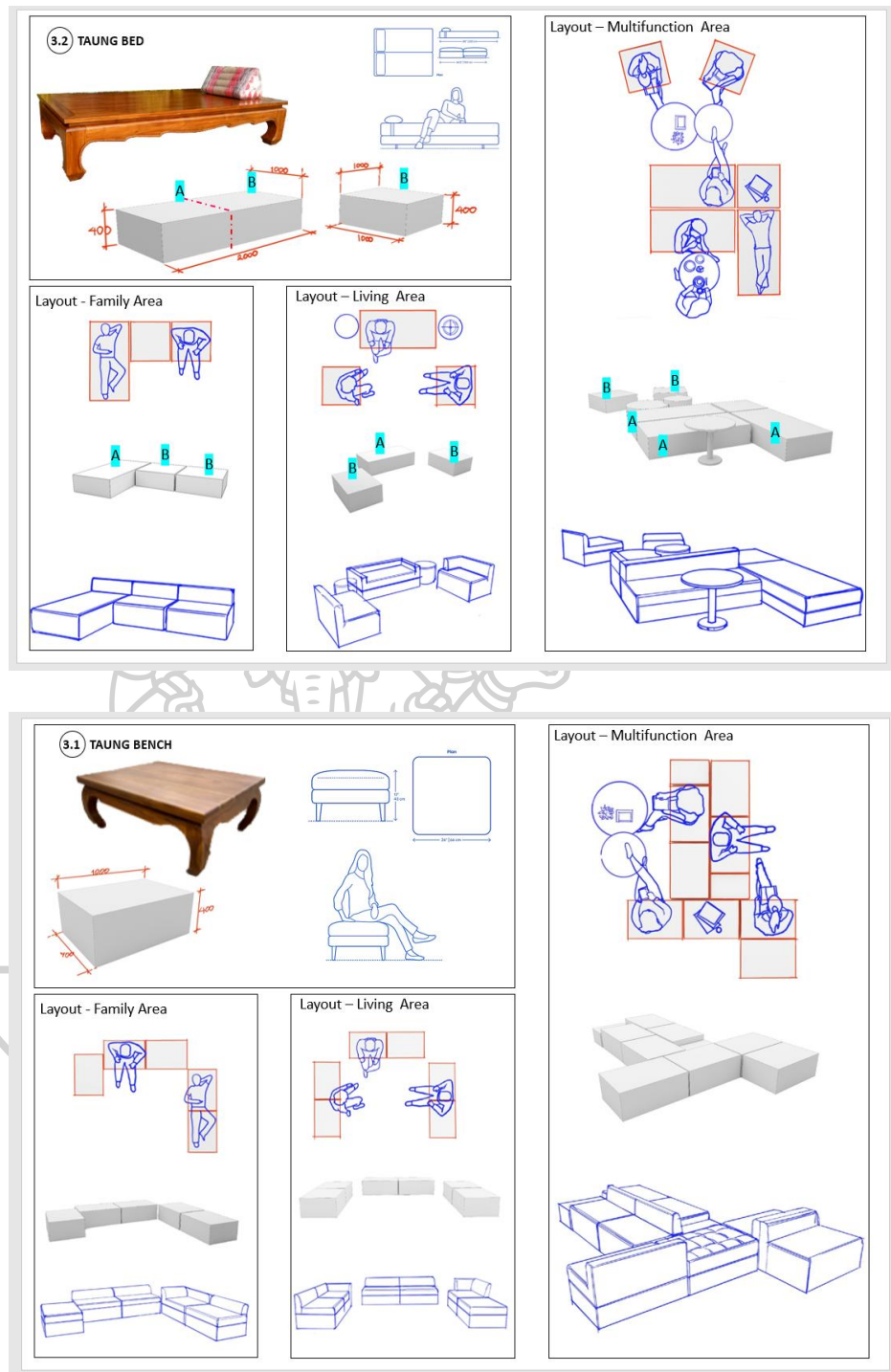


Figure 61 Combined Siam seat and Western seating to development

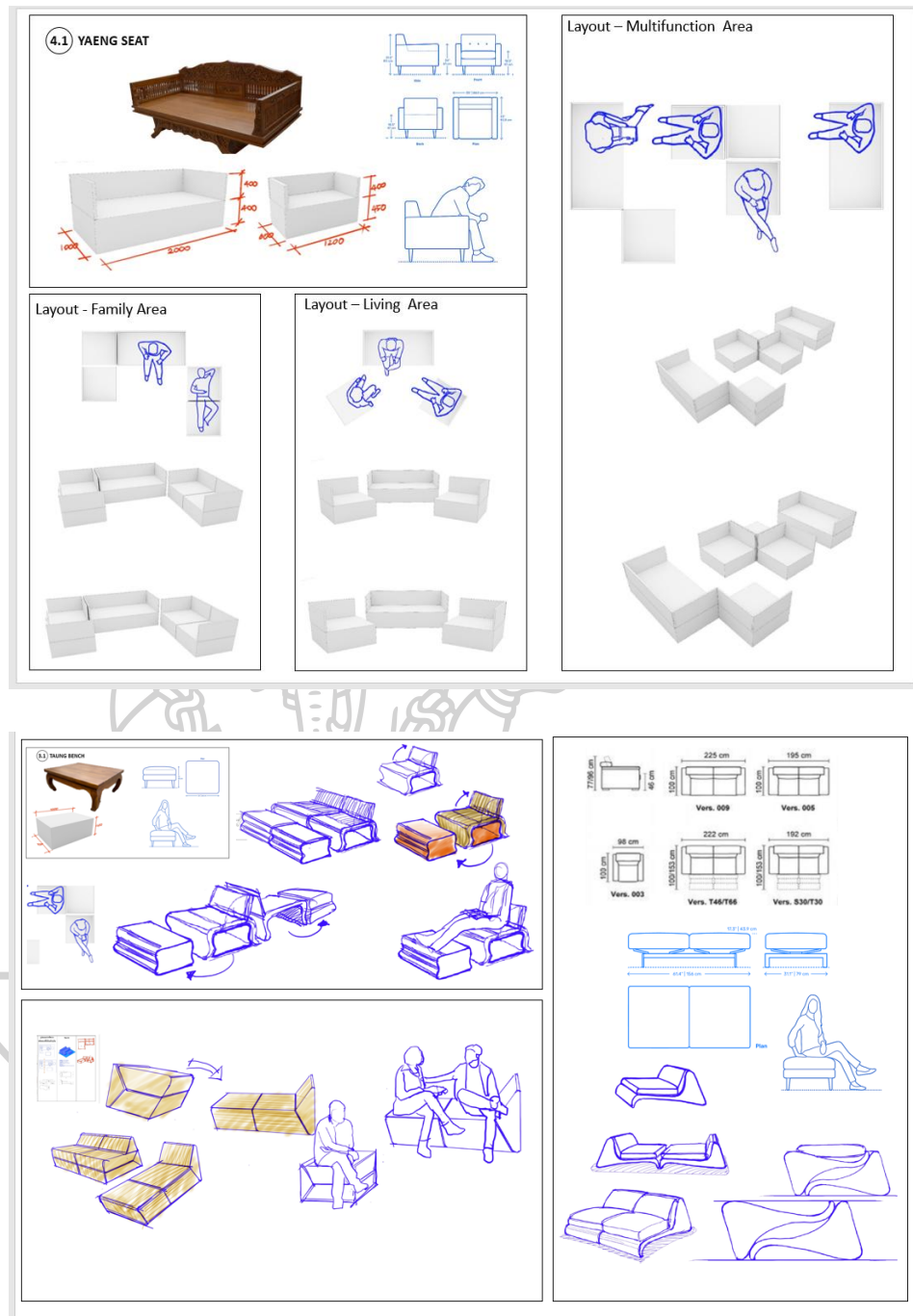


Figure 62 Combined Siam seat and Western seating to development

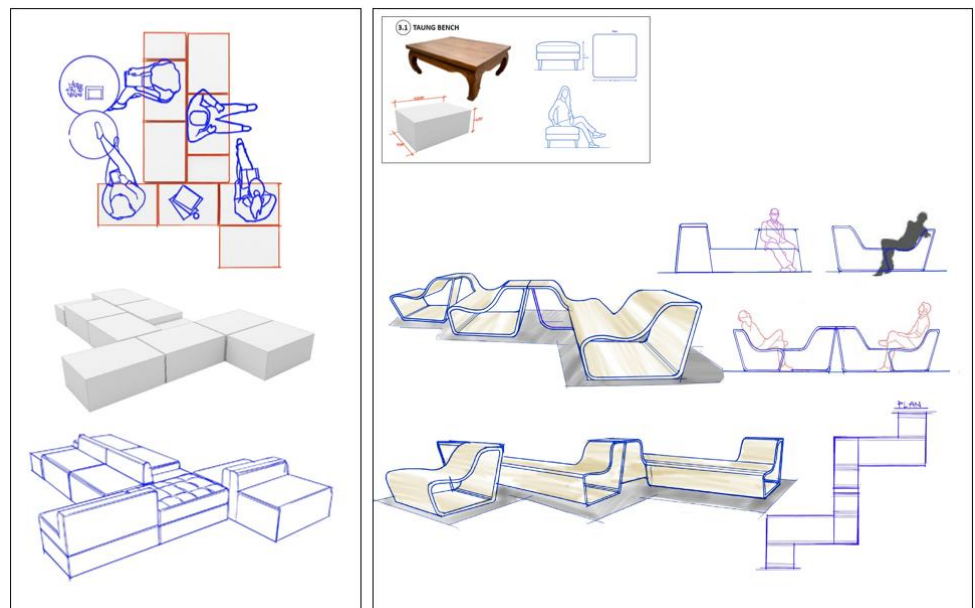


Figure 63 Combined Siam seat and international seating standard to development

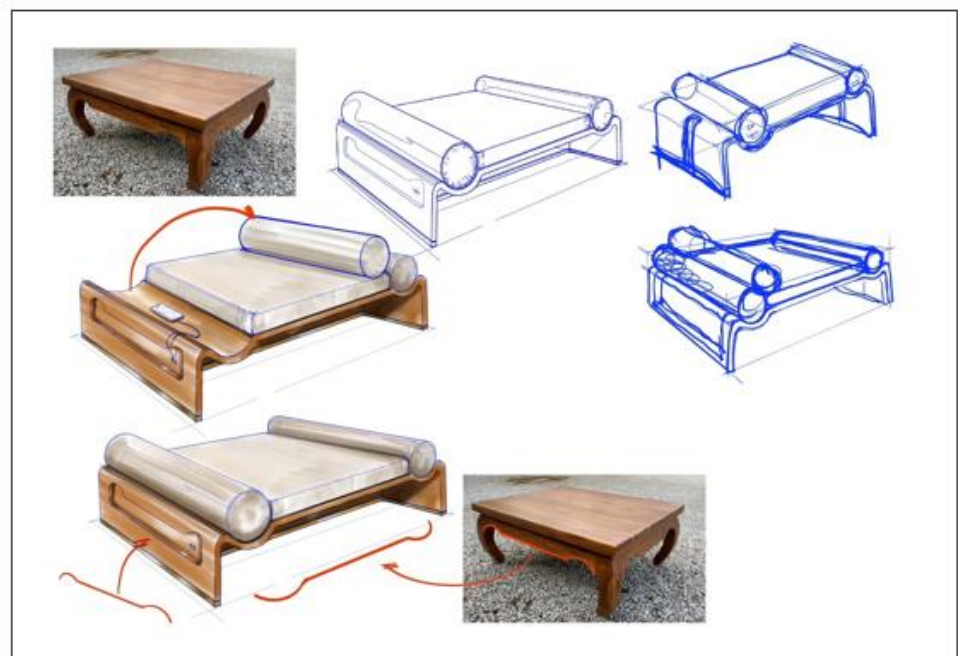


Figure 64 Sketch Design development

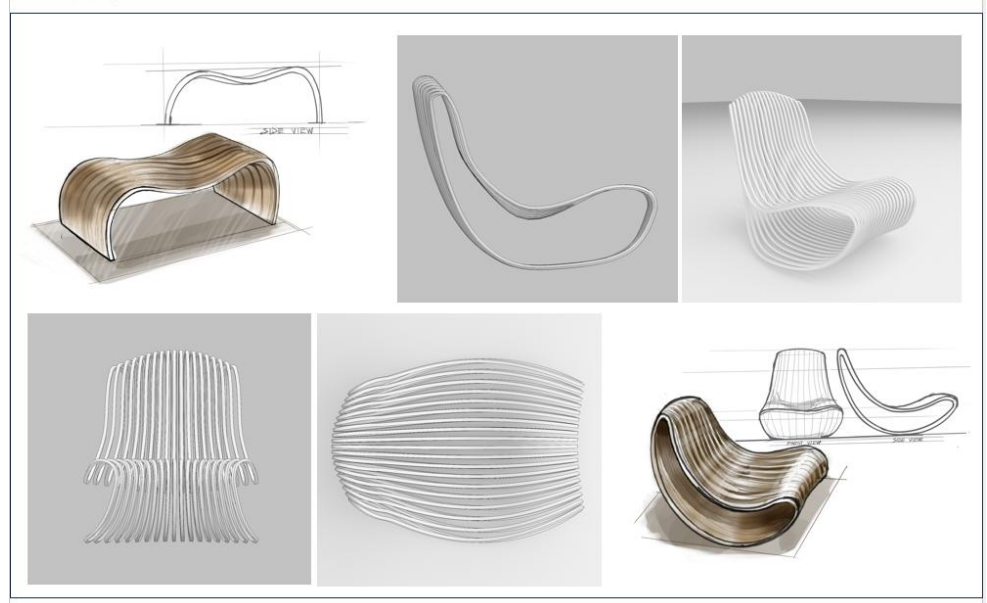


Figure 65 Sketch Design development

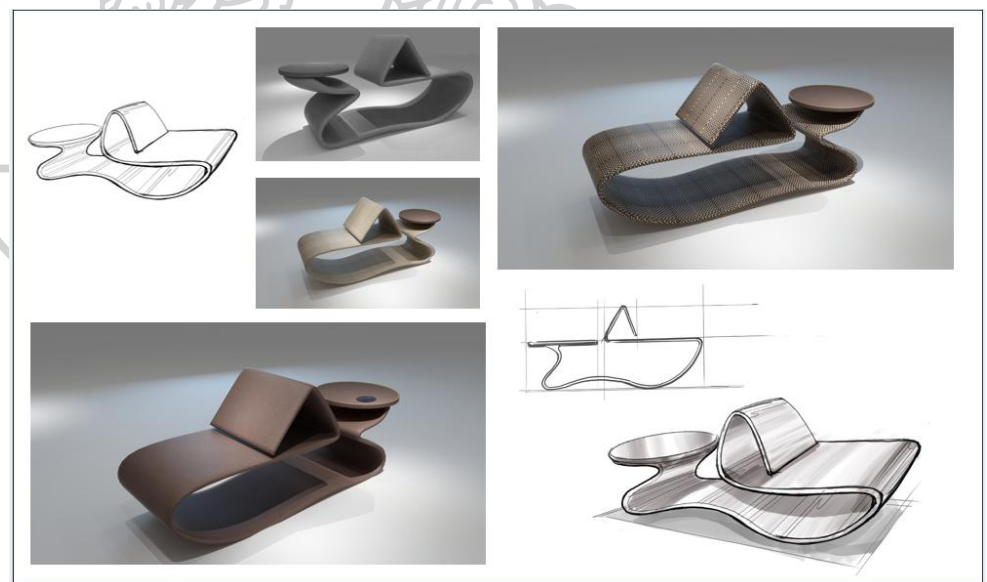


Figure 66 Sketch Design development



Figure 67 Sketch Design development

Design Solution

Presented here is the culmination of design efforts, including prototypes and design iterations that address both functional and esthetic considerations while meeting ergonomic standards and respecting traditional Siamese values.

This section presents the prototypes and design iterations developed through rigorous research and creative exploration that represent the culmination of the design efforts. The design solutions are crafted to address both functional and esthetic considerations, balancing modern ergonomic standards with respect for traditional Siamese values.

The design solutions integrate a series of prototypes, each representing a unique approach to enhancing new seating. These prototypes are the result of iterative refinements based on user feedback, ergonomic studies, and material evaluations. Each iteration aims to achieve optimal comfort, usability, and visual appeal, ensuring that the final design aligns with the specific needs and preferences of its intended users.

Table 17 Table showing the proportion of Siam seats

1 Mat 1000x1950	2 Krae 800x1500x450	3.1 Tang Seat 700x1000x450	3.2 Tang bed 900x2000x450	4.1 Yeang Seat 600x1200x450
 1200x1950	 1000x1800x450		 1000x2000x450	4.2 Yeang Bed 1000x2000x450
 1400x1950	 1300x1800x450		 1280x1980x450	

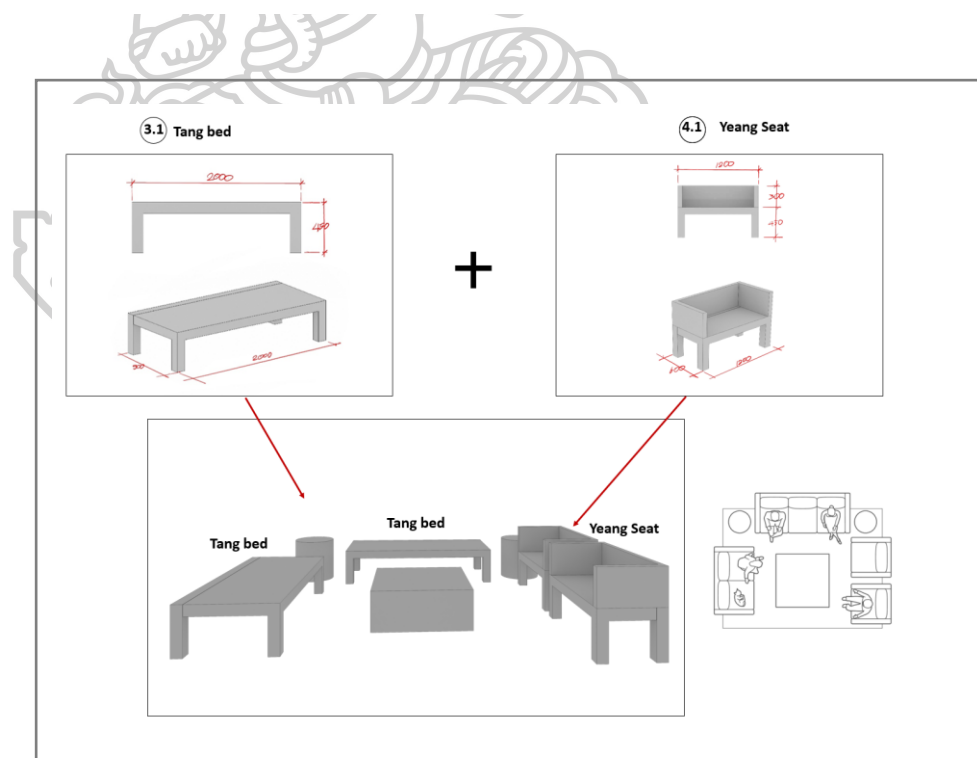


Figure 68 Combined Siam seat and Western seating to development

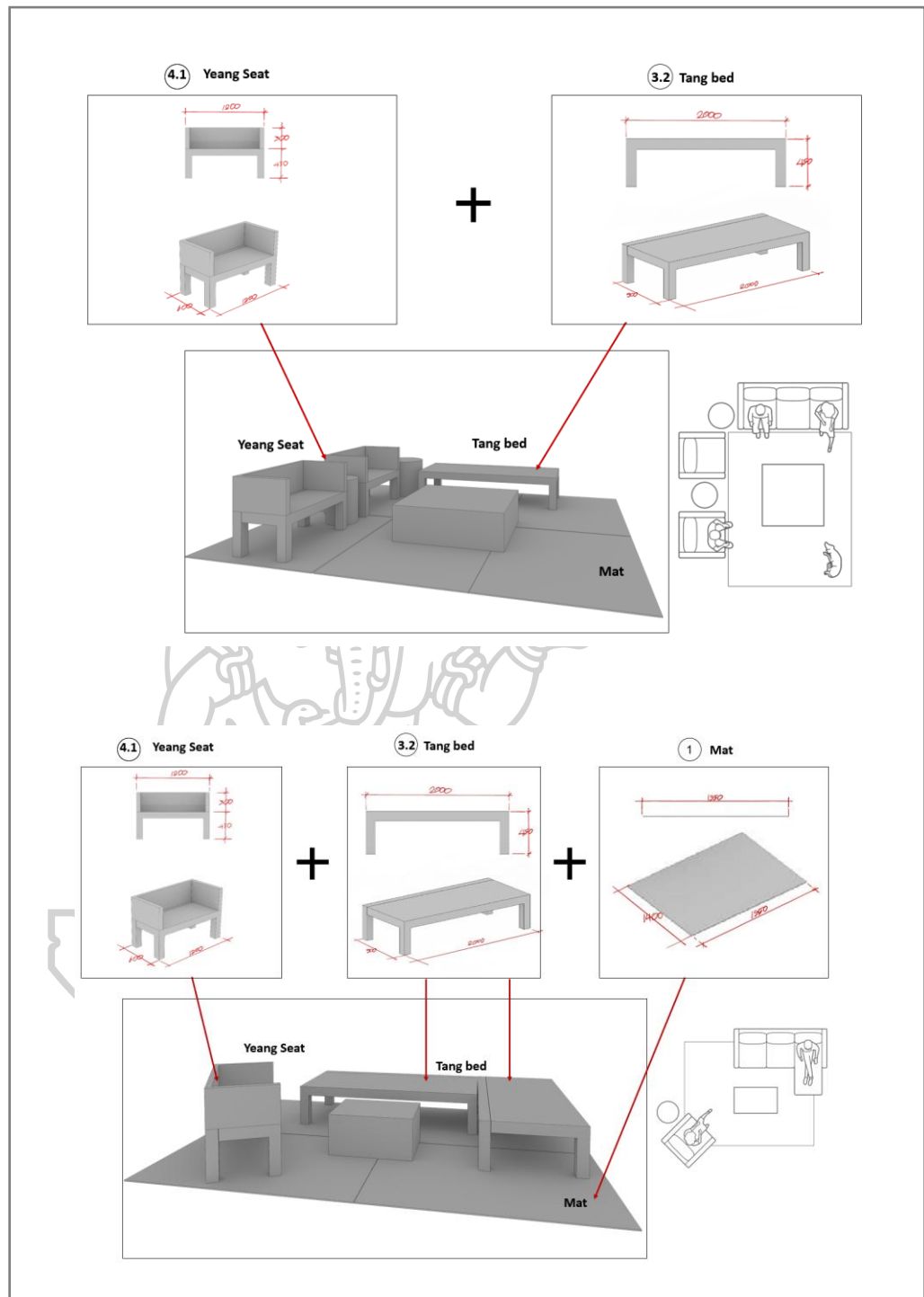


Figure 69 Combined Siam seat and Western seating to development

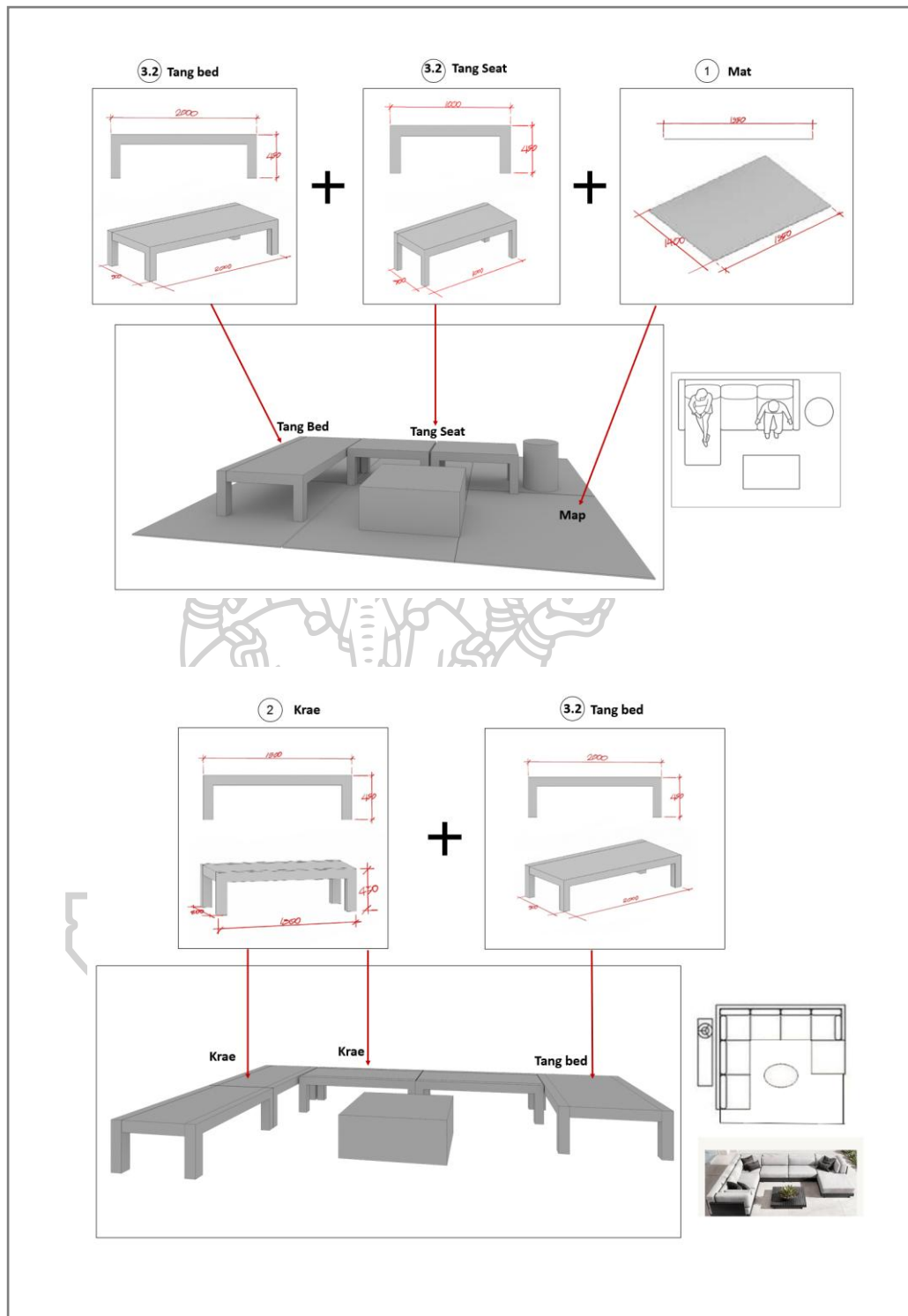


Figure 70 Combined Siam seat and Western seating to development

Table 19 Output: Formal – Informal – Casual

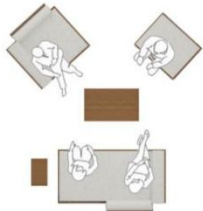
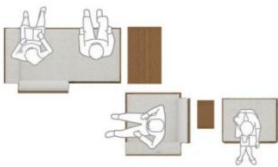

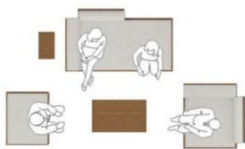
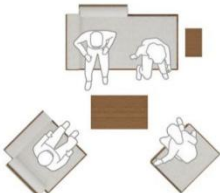

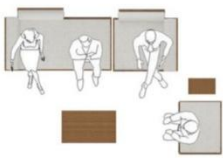
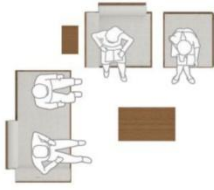
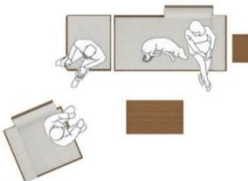
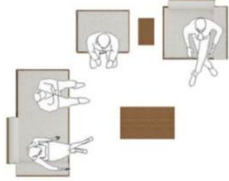
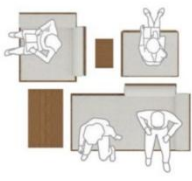


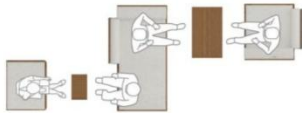
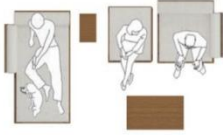
OUTPUT		
FORMAL SEATING LAYOUT	INFORMAL SEATING LAYOUT	CASUAL SEATING LAYOUT
6. 		
7. 		
8. 		
9. 		
10 		

Table 20 Output: Formal Seating






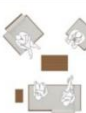
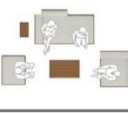

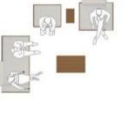
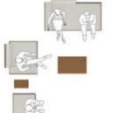
OUTPUT				
FORMAL SEATING				
ALTERNATIVE EXPERIENCE	PLACE	FEATURE	USAGE AND FUNCTION	POSTURE AND BEHAVIOR
1. 	<ul style="list-style-type: none"> Reception Areas Lobby Waiting Area 	Seating Variety: Different types of seats. Offer a variety of seating options like couches, armchairs, stools, and benches. This not only enhances comfort but also accommodates different preferences.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Sitting with legs dangling Sit cross-legged Sit without facing each other. Face sideways
2. 	<ul style="list-style-type: none"> Reception Areas Lobby Waiting Area Conference Rooms Offices Ceremonial Spaces 	The face-to-face format promotes communication and interaction, allowing participants to easily see and communicate with each other, making it ideal for intimate meetings.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair 	<ul style="list-style-type: none"> Sitting with legs dangling Sit cross-legged Sit facing each other for conversation.
3. 	<ul style="list-style-type: none"> Reception Areas Lobby Waiting Area Conference Rooms Offices Ceremonial Spaces 	Formal seating arranged facing each other is a popular arrangement in situations where participants need to communicate and interact in a convenient and orderly manner.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair 	<ul style="list-style-type: none"> Sitting with legs dangling Sit cross-legged
4. 	<ul style="list-style-type: none"> Reception Areas Lobby 	Modular seating: Flexible seating arrangements that can be easily reconfigured depending on the need, can increase the lobby's functionality.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair Use as a stool 	<ul style="list-style-type: none"> Sitting with legs dangling Sit cross-legged Sit without facing each other.
5. 	<ul style="list-style-type: none"> Reception Areas Lobby Waiting Area Offices Ceremonial Spaces 	U-Shape Layout: Tables are arranged in a U-shape with chairs along the outer edges. This layout is common in formal meetings, allowing for eye contact and interaction among participants.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair 	<ul style="list-style-type: none"> Sitting with legs dangling Sit cross-legged Sit facing each other for conversation.
6. 	<ul style="list-style-type: none"> Reception Areas Lobby Waiting Area Conference Rooms Offices Ceremonial Spaces 	Group seating: Include arrangements for individuals as well as small groups to facilitate both private moments and collaborative interactions.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair 	<ul style="list-style-type: none"> Sitting with legs dangling Sit cross-legged Sit facing each other for conversation.
7. 	<ul style="list-style-type: none"> Reception Areas Lobby Waiting Area Conference Rooms Offices Ceremonial Spaces 	Formal seating layouts typically emphasize symmetry, creating a balanced and harmonious arrangement.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair 	<ul style="list-style-type: none"> Sitting with legs dangling Sit cross-legged Sit facing each other for conversation.
8. 	<ul style="list-style-type: none"> Reception Areas Lobby Waiting Area Offices Ceremonial Spaces 	Reserved Seating: Specific seats or tables may be reserved with name cards or signs, particularly for dignitaries, speakers, or other key attendees.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair Use as a stool 	<ul style="list-style-type: none"> Lean back a little in a chair to relax. Sitting with legs dangling Sit cross-legged
9. 	<ul style="list-style-type: none"> Reception Areas Lobby Waiting Area 	A unique or oversized seating element, such as a custom bench	<ul style="list-style-type: none"> Use as a sofa Use as an armchair Use as a stool 	<ul style="list-style-type: none"> Lean back a little in a chair to relax. Sitting with legs dangling Sit cross-legged Sit without facing each other.
10. 	<ul style="list-style-type: none"> Reception Areas Lobby Waiting Area Offices Ceremonial Spaces 	The seating arrangement is formal, but the design should take into account the comfort of the user. The design allows for sitting for a long time without feeling cramped.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Lean back a little in a chair to relax. Sitting with legs dangling Sit cross-legged Sit without facing each other.

Table 21 Output: Informal Seating








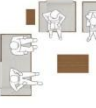

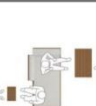










OUTPUT				
INFORMAL SEATING				
ALTERNATIVE EXPERIENCE	PLACE	FEATURE	USAGE AND FUNCTION	POSTURE AND BEHAVIOR
1. 	<ul style="list-style-type: none"> Living Rooms Lounges Cafés Break Rooms Home Offices Recreational Areas 	Informal seating arrangements primarily encourage interaction while also considering privacy, with options like slightly spaced seating or cushions that create small private spaces.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning back to relax Sitting with legs dangling Sitting cross-legged Sitting without facing each other Make personal behavior
2. 	<ul style="list-style-type: none"> Living Rooms Lounges Cafés Break Rooms Home Offices Recreational Areas 	Seating arrangements with small spacing or using seats that provide little personal space	<ul style="list-style-type: none"> Use as a sofa Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning back to relax Sitting with legs dangling Sitting cross-legged Sitting without facing each other Reading while seated
3. 	<ul style="list-style-type: none"> Living Rooms Lounges Cafés Break Rooms Home Offices Recreational Areas 	Seating facing each other allows participants to communicate and share ideas easily. It also promotes a sense of intimacy and friendliness, creating a less stressful atmosphere.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning back to relax Sitting with legs dangling Sitting cross-legged Sitting facing one another Laying back a little
4. 	<ul style="list-style-type: none"> Living Rooms Lounges Cafés Break Rooms Home Offices Recreational Areas 	Informal seating is often designed to be flexible, making it suitable for everything from family meals to community events.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair Use as an Easy chair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning back to relax Sitting with legs dangling Sitting without facing each other Make personal behavior
5. 	<ul style="list-style-type: none"> Living Rooms Lounges Cafés Break Rooms Home Offices Recreational Areas 	Seating arrangements with small spacing or using seats that provide little personal space	<ul style="list-style-type: none"> Use as a sofa Use as an armchair Use as an Easy chair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning back to relax Sitting with legs dangling Sitting cross-legged Sitting without facing each other Reading while seated
6. 	<ul style="list-style-type: none"> Living Rooms Lounges Cafés Break Rooms Home Offices Recreational Areas 	Informal seating arrangements are primarily interactive, but privacy is also taken into account in some contexts, such as seating that is spaced slightly apart or using cushions that provide a small private space.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair Use as an Easy chair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning back to relax Sitting with legs dangling Sitting cross-legged Sitting facing one another or without facing each other Laying back a little
7. 	<ul style="list-style-type: none"> Living Rooms Lounges Cafés Break Rooms Home Offices Recreational Areas 	Seating arrangements tend to emphasize interaction, facing each other to promote a sense of togetherness in informal contexts.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair Use as an Easy chair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning back to relax Sitting with legs dangling Sitting cross-legged Sitting facing one another
8. 	<ul style="list-style-type: none"> Living Rooms Lounges Cafés Break Rooms Home Offices Recreational Areas 	Seating arrangements are designed to encourage interaction between people, while still maintaining a balance between intimacy and privacy in each situation.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning back to relax Sitting with legs dangling Sitting cross-legged Sitting facing one another
9. 	<ul style="list-style-type: none"> Living Rooms Lounges Cafés Break Rooms Home Offices Recreational Areas 	Seating arrangements where occupants can talk without having to face each other all the time. Turning to the side reduces the feeling of pressure and formality. Suitable for relaxation or activities that require relaxation.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair Use as an Easy chair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning back to relax Sitting with legs dangling Sitting cross-legged Sitting without facing each other Reading while seated
10. 	<ul style="list-style-type: none"> Living Rooms Lounges Cafés Break Rooms Home Offices Recreational Areas 	Informal seating arrangements are primarily interactive, but privacy is also taken into account in some contexts, such as seating that is spaced slightly apart or using cushions that provide a small private space.	<ul style="list-style-type: none"> Use as a sofa Use as an armchair Use as an Easy chair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning back to relax Sitting with legs dangling Sitting cross-legged Sitting facing one another or without facing each other Reading while seated Laying back a little

Table 22 Output: Casual Seating

OUTPUT				
CASUAL SEATING				
ALTERNATIVE EXPERIENCE	PLACE	FEATURE	USAGE AND FUNCTION	POSTURE AND BEHAVIOR
1. 	<ul style="list-style-type: none"> Family Rooms Open-Plan Living Areas Porches and Verandas Guest Room Bedroom 	Seating should be arranged in a very random manner so that people can choose where they feel most comfortable, such as by placing benches or cushions with a small distance between them.	<ul style="list-style-type: none"> Use as a sofa Use as a Daybed Use as an armchair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning Back Hanging Legs Cross-Leg Lying down with legs slightly back
2. 	<ul style="list-style-type: none"> Family Rooms Open-Plan Living Areas Porches and Verandas Guest Room Bedroom 	The seats are arranged so that you can sit and lie down. The benches or seats are arranged with a small distance between them.	<ul style="list-style-type: none"> Use as a sofa Use as a Daybed Use as an armchair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning Back Hanging Legs Cross-Leg Lying down with legs slightly back
3. 	<ul style="list-style-type: none"> Family Rooms Open-Plan Living Areas Porches and Verandas Guest Room Bedroom 	The seats are arranged so that you can sit and lie down. The benches or seats are arranged with a small distance between them.	<ul style="list-style-type: none"> Use as a sofa Use as a Daybed Use as an armchair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning Back Hanging Legs Cross-Leg Lying down with legs slightly back
4. 	<ul style="list-style-type: none"> Family Rooms Open-Plan Living Areas Porches and Verandas Guest Room Bedroom 	The arrangement accommodates both sitting and lying down, offering flexibility for individuals to choose their preferred position, enhancing relaxation and social interaction.	<ul style="list-style-type: none"> Use as a sofa Use as a Daybed Use as an armchair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning Back Hanging Legs Cross-Leg Lying down with legs slightly back
5. 	<ul style="list-style-type: none"> Family Rooms Open-Plan Living Areas Porches and Verandas Guest Room Bedroom 	Seating should be arranged in a very random manner so that people can choose where they feel most comfortable, such as by placing benches or cushions with a small distance between them.	<ul style="list-style-type: none"> Use as a sofa Use as a Daybed Use as an armchair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning Back Hanging Legs Cross-Leg Lying down with legs slightly back
6. 	<ul style="list-style-type: none"> Family Rooms Open-Plan Living Areas Porches and Verandas Guest Room Bedroom 	The seats are arranged so that you can sit and lie down. The benches or seats are arranged with a small distance between them.	<ul style="list-style-type: none"> Use as a sofa Use as a Daybed Use as an armchair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning Back Hanging Legs Cross-Leg Lying down with legs slightly back
7. 	<ul style="list-style-type: none"> Family Rooms Open-Plan Living Areas Porches and Verandas Guest Room Bedroom 	The seats are arranged so that you can sit and lie down. The benches or seats are arranged with a small distance between them.	<ul style="list-style-type: none"> Use as a sofa Use as a Daybed Use as an armchair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning Back Hanging Legs Cross-Leg Lying down with legs slightly back
8. 	<ul style="list-style-type: none"> Family Rooms Open-Plan Living Areas Porches and Verandas Guest Room Bedroom 	Seating and Lying Down: The arrangement allows for flexibility, enabling individuals to either sit comfortably or lie down as desired. This dual function enhances relaxation and social interaction.	<ul style="list-style-type: none"> Use as a sofa Use as a Daybed Use as an armchair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning Back Hanging Legs Cross-Leg Lying down with legs slightly back
9. 	<ul style="list-style-type: none"> Family Rooms Open-Plan Living Areas Porches and Verandas Guest Room Bedroom 	The seats are arranged so that you can sit and lie down. The benches or seats are arranged with a small distance between them.	<ul style="list-style-type: none"> Use as a sofa Use as a Daybed Use as an armchair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning Back Hanging Legs Cross-Leg Lying down with legs slightly back
10. 	<ul style="list-style-type: none"> Family Rooms Open-Plan Living Areas Porches and Verandas Guest Room Bedroom 	Benches or seats are arranged with a small distance between them. This spacing promotes a sense of openness while still maintaining a cozy atmosphere, allowing for personal space without sacrificing connection among individuals.	<ul style="list-style-type: none"> Use as a sofa Use as a Daybed Use as an armchair Use as a stool Use as a bench 	<ul style="list-style-type: none"> Leaning Back Hanging Legs Cross-Leg Lying down with legs slightly back

OUTPUT INFORMAL SEATING: RENDERING TO SEE SPACE

Modular seating: Flexible seating arrangements that can be easily reconfigured depending on the need, can increase the lobby's functionality such as Lobby, Lobby Lounge, Waiting Area, etc.



Figure 71 Output Formal Seating: Rendering to see space

OUTPUT INFORMAL SEATING: RENDERING TO SEE SPACE

Formal seating arranged facing each other is a popular arrangement in situations where participants need to communicate and interact in a convenient such as Reception Areas, Lobby, Waiting Area, Offices, etc.



Figure 72 Output Formal Seating: Rendering to see space

OUTPUT INFORMAL SEATING: RENDERING TO SEE SPACE

Seating arrangements tend to emphasize interaction, facing each other to promote a sense of togetherness in informal contexts such as Living Rooms, Break Rooms, etc.



Figure 73 Output Informal Seating: Rendering to see space

OUTPUT CASUAL SEATING: RENDERING TO SEE SPACE

Seating should be arranged in a very random manner so that people can choose where they feel most comfortable by placing benches or cushions with a small distance between them such as in Family Rooms, Open-Plan Living Areas, Porches, and Verandas, Guest Room, Bedroom, etc.



Figure 74 Output Casual Seating: Rendering to see space

ALTERNATIVE MODEL OF SEATING EXPERIMENT

Evaluating how the developed designs improve the user experience in indoor public spaces, with a focus on comfort and interaction in these environments.

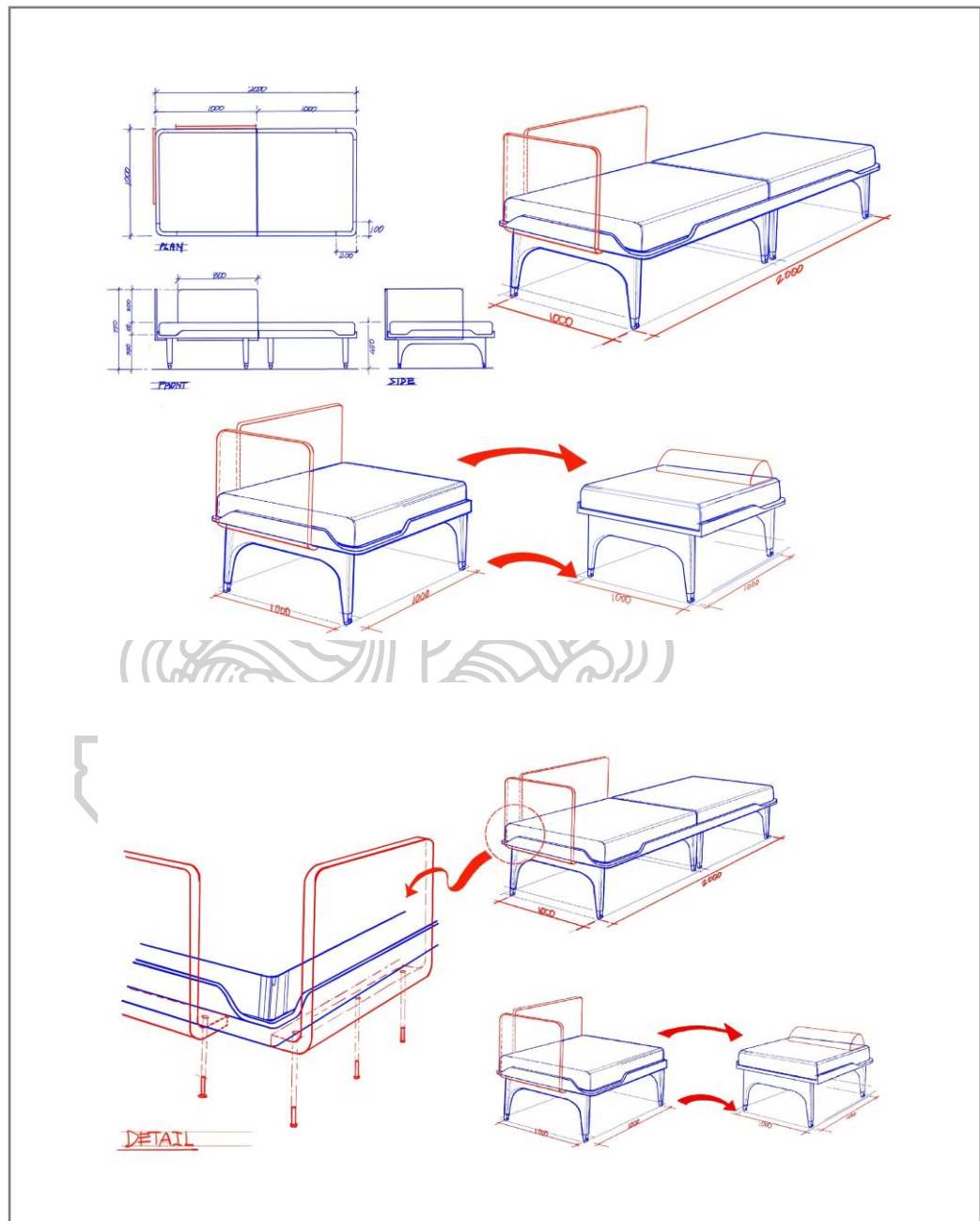


Figure 75 Design Develop the Alternative Model of Seating Option 1

ALTERNATIVE MODEL OF SEATING EXPERIMENT



Figure 77 Model of the Alternative Model of Seating Option 1

ALTERNATIVE MODEL OF SEATING EXPERIMENT



Figure 78 Prototype of the Alternative Model of Seating Option 1

ALTERNATIVE MODEL OF SEATING EXPERIMENT



Figure 79 Prototype of the Alternative Model of Seating Option 1

ALTERNATIVE MODEL OF SEATING EXPERIMENT



Figure 80 Prototype of the Alternative Model of Seating Option 1

ALTERNATIVE MODEL OF SEATING EXPERIMENT



Figure 81 3D Model of the Alternative Model of Seating Option 1

ALTERNATIVE MODEL OF SEATING EXPERIMENT



Figure 82 3D Model of the Alternative Model of Seating Option 1

ALTERNATIVE MODEL OF SEATING EXPERIMENT

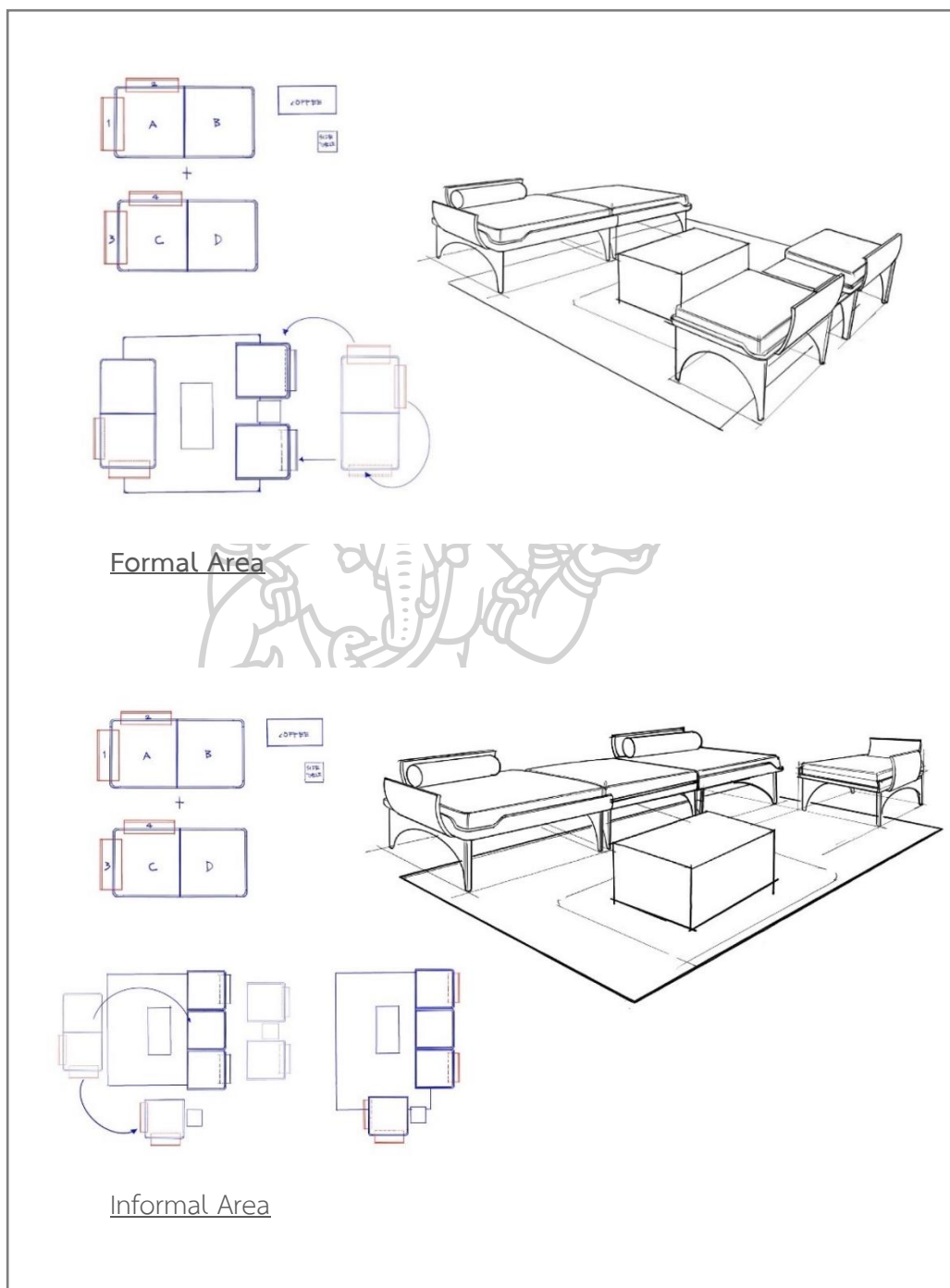


Figure 83 Alternative Model of Seating setting to spaces

ALTERNATIVE MODEL OF SEATING EXPERIMENT

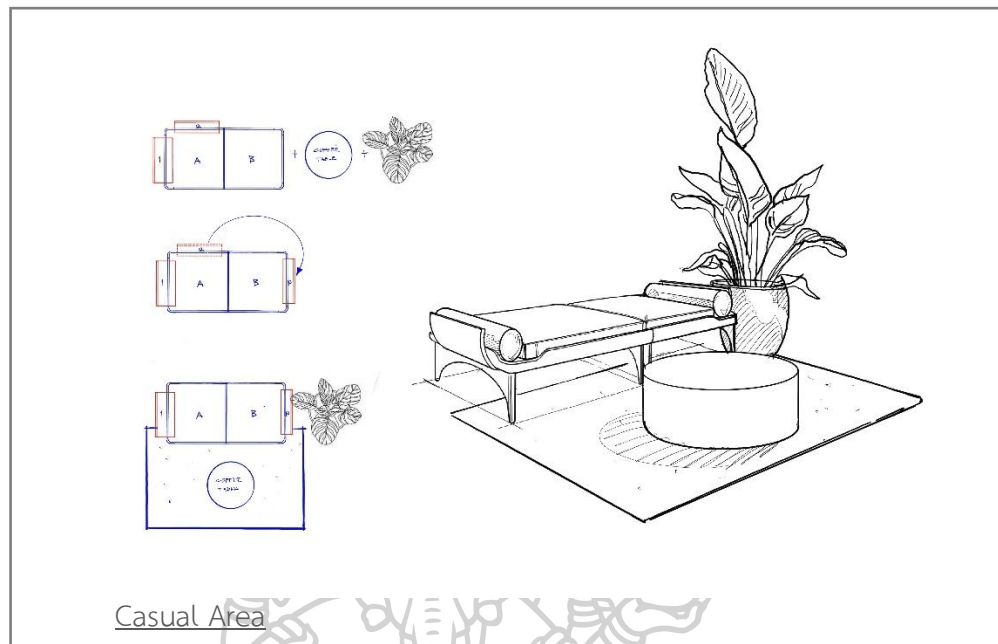


Figure 84 Alternative Model of Seating setting to spaces

Through design development and experimentation with various furniture styles, it was discovered that blending Thai furniture layouts with international styles creates flexibility and effectively meets diverse user needs. These layouts can be adapted to three contexts:

Formal style: Emphasizes elegance and formality, suitable for meeting rooms, living rooms, or ceremonial spaces.

Semi-formal style: Offers flexibility while maintaining some formality, ideal for reception rooms or personal offices, blending simplicity with functionality.

Casual style: Focuses on relaxation, suitable for everyday use in recreational areas, homes, or public spaces like cafes, combining simple furniture with international layouts for added comfort and versatility.

ALTERNATIVE MODEL OF SEATING EXPERIMENT

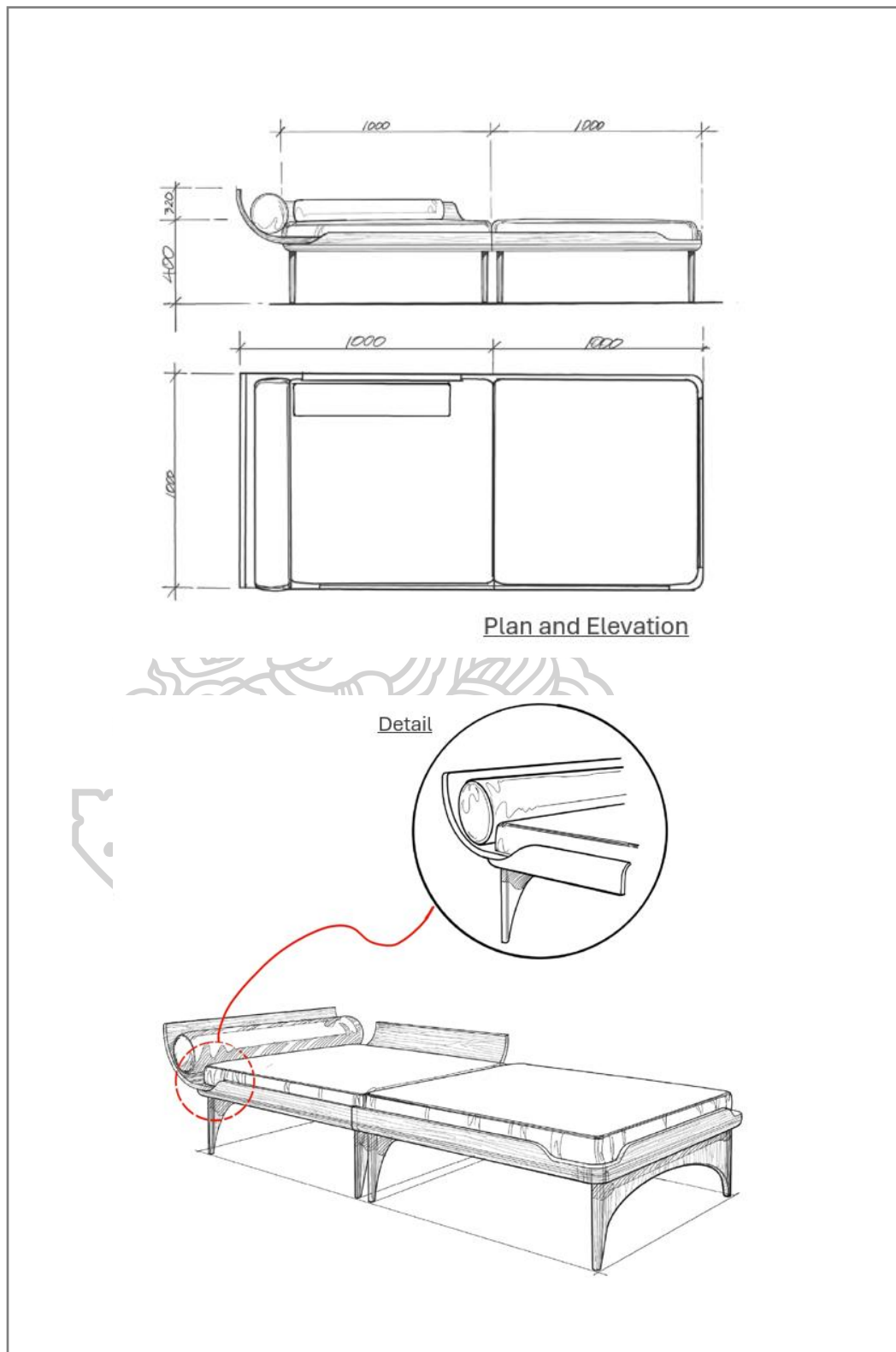


Figure 85 Design Develop the Alternative Model of Seating Option 2

ALTERNATIVE MODEL OF SEATING EXPERIMENT

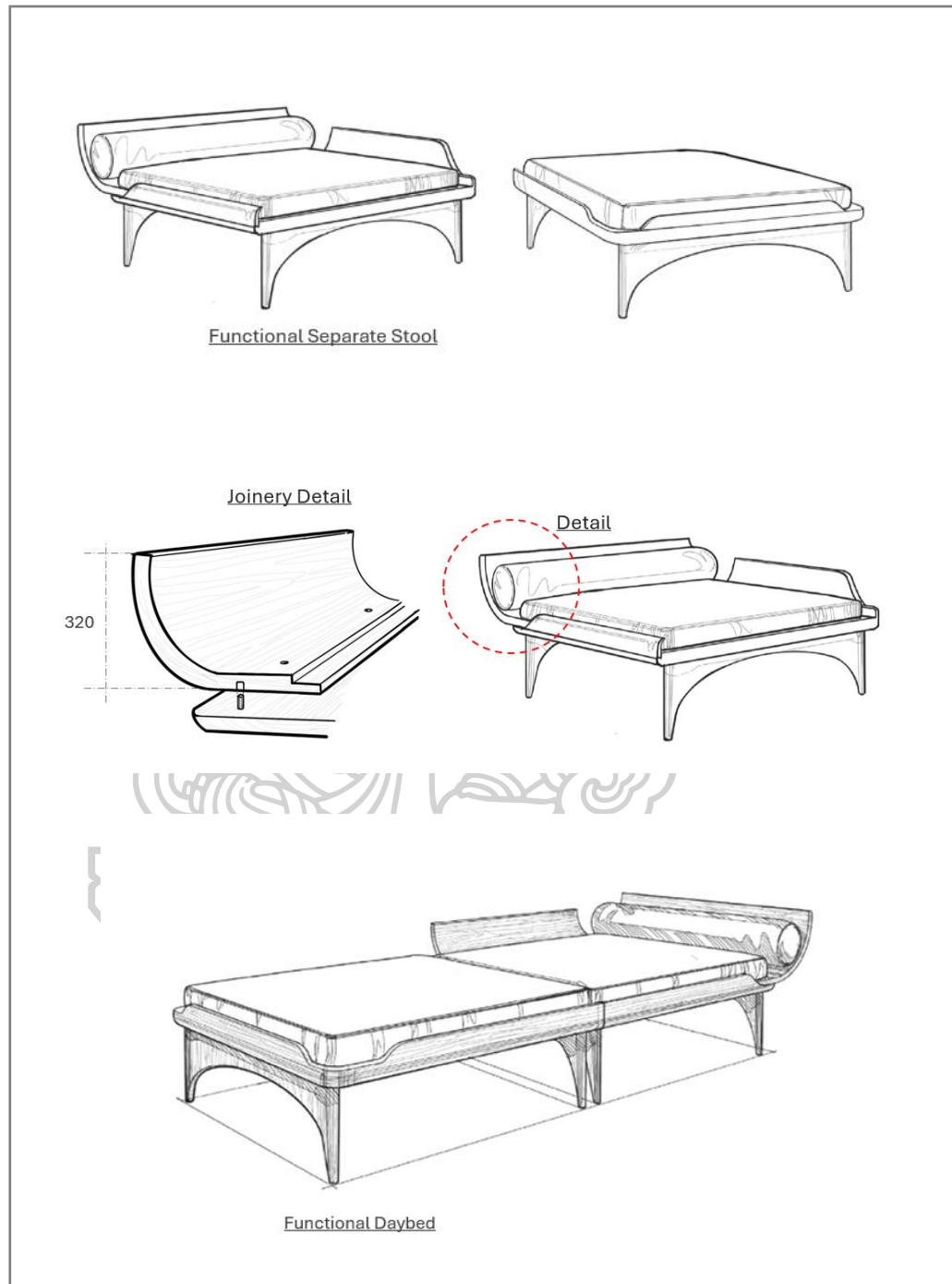


Figure 86 Design Develop the Alternative Model of Seating Option 2

ALTERNATIVE MODEL OF SEATING EXPERIMENT



Figure 87 Design Develop the Alternative Model of Seating Option 2

ALTERNATIVE MODEL OF SEATING EXPERIMENT



Figure 88 Design Develop the Alternative Model of Seating Option 2

ALTERNATIVE MODEL OF SEATING EXPERIMENT



Figure 89 Prototype of the Alternative Model of Seating Option 2

ALTERNATIVE MODEL OF SEATING EXPERIMENT



Figure 90 Prototype of the Alternative Model of Seating Option 2

ALTERNATIVE MODEL OF SEATING EXPERIMENT



Figure 91 Prototype of the Alternative Model of Seating Option 2

ALTERNATIVE MODEL OF SEATING EXPERIMENT

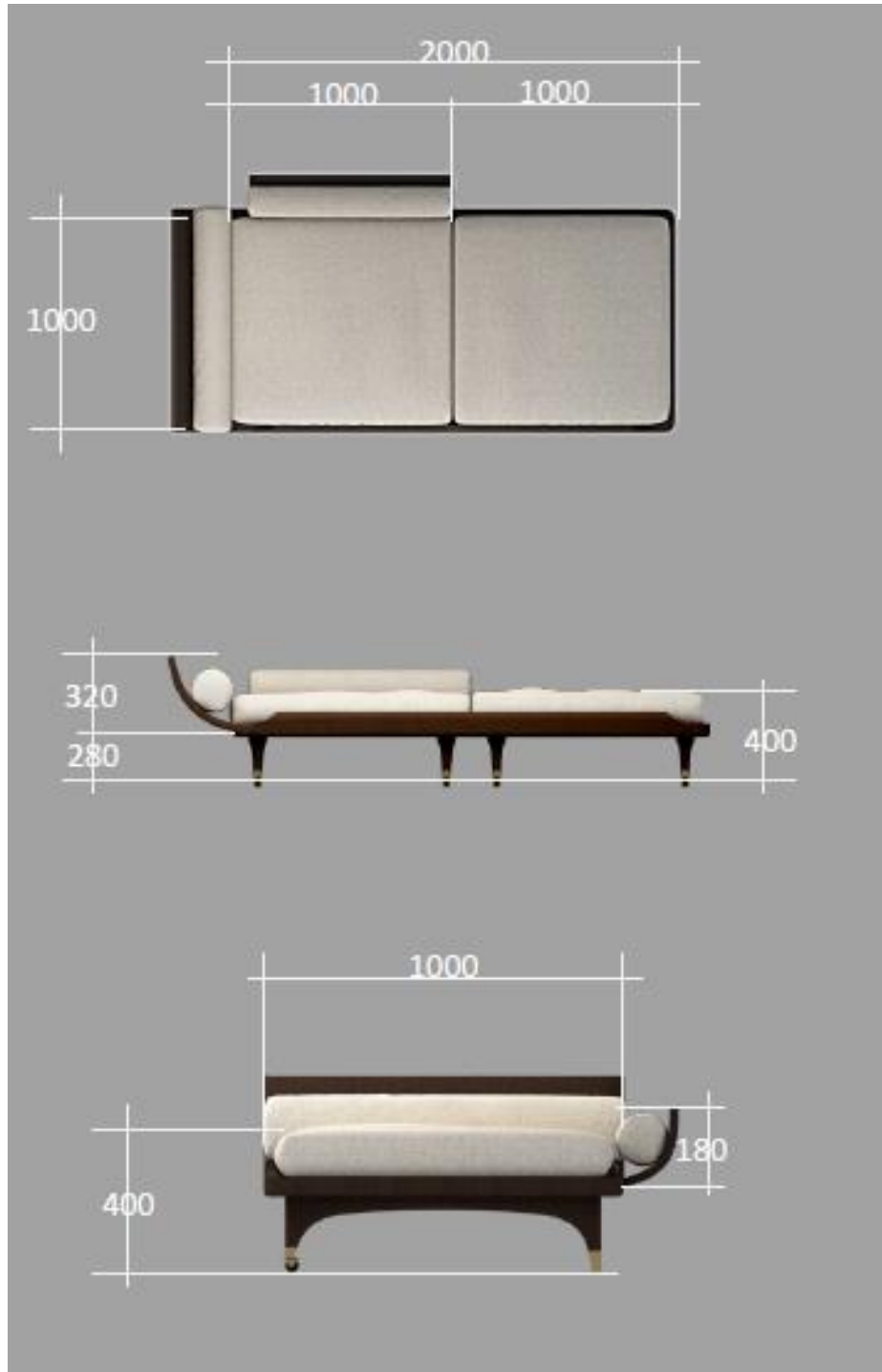


Figure 92 Design Develop the Alternative Model of Seating Option 3

ALTERNATIVE MODEL OF SEATING EXPERIMENT



Figure 93 Design Develop the Alternative Model of Seating Option 3

ALTERNATIVE MODEL OF SEATING EXPERIMENT



Figure 94 Design Develop the Alternative Model of Seating Option 3

ALTERNATIVE MODEL OF SEATING EXPERIMENT



Figure 95 Design Develop the Alternative Model of Seating Option 3

ALTERNATIVE MODEL OF SEATING

THE DEVELOPMENT OF SEATING FROM SIAM SEAT



A new seating model by Siam Seating seamlessly combines traditional Thai sitting practices with modern ergonomic design. It integrates classic aesthetics with adjustable, supportive features, offering a culturally relevant solution for contemporary seating needs. This model enhances user experiences across formal, informal, and casual spaces.

Figure 96 Design Develop the Alternative Model of Seating Option 3

ALTERNATIVE MODEL OF SEATING

THE DEVELOPMENT OF SEATING FROM SIAM SEAT



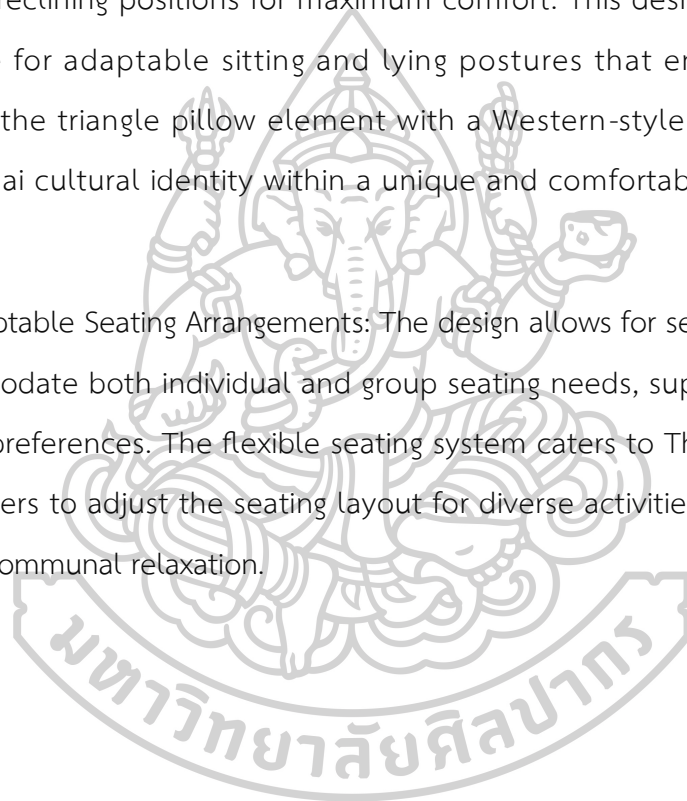
Figure 97 Design Develop the Alternative Model of Seating Option 3

THE FINAL DESIGN DEVELOPMENT

The final design development for the Viva presentation emphasizes a flexible seating area that can adapt to various spaces, supporting both sitting and resting behaviors in Thai seating culture. The primary design approaches include:

Flexible Backrest: Inspired by the traditional Thai triangle pillow, the backrest has been reimagined with a modern aesthetic, allowing users to shift easily between sitting and reclining positions for maximum comfort. This design reflects the Thai preference for adaptable sitting and lying postures that enhance relaxation. Integrating the triangle pillow element with a Western-style cylindrical armrest conveys Thai cultural identity within a unique and comfortable platform seating experience.

Adaptable Seating Arrangements: The design allows for seamless adjustments to accommodate both individual and group seating needs, supporting a variety of relaxation preferences. The flexible seating system caters to Thai social behaviors, enabling users to adjust the seating layout for diverse activities, whether enjoying solitary or communal relaxation.



THE FINAL DESIGN DEVELOPMENT

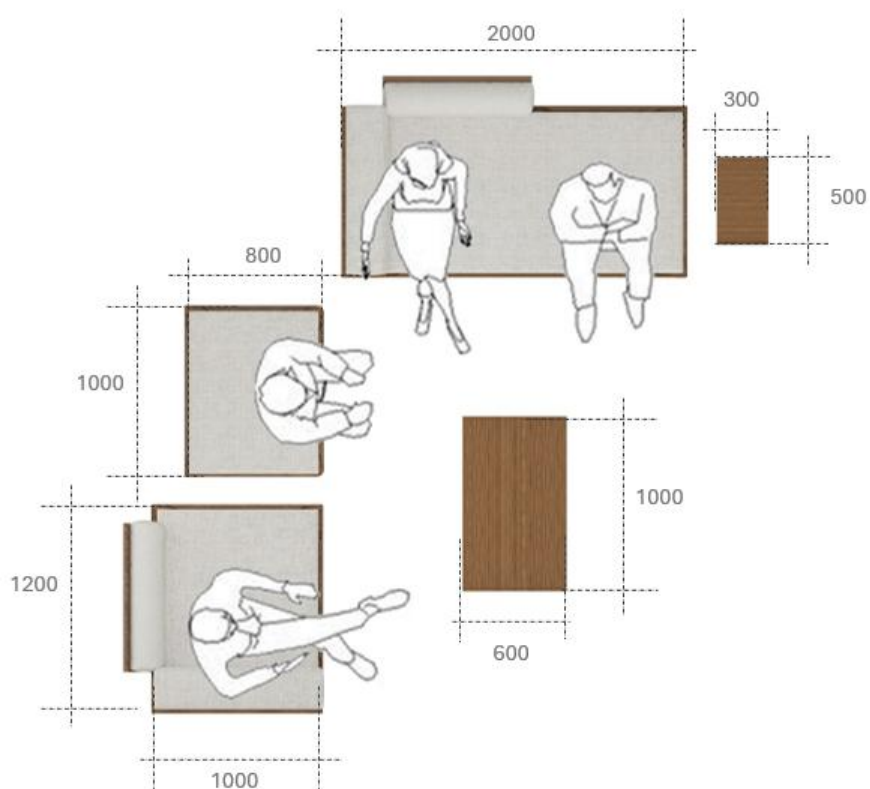


Figure 98 The final design development

THE FINAL DESIGN DEVELOPMENT



Figure 99 The final design development

THE FINAL DESIGN DEVELOPMENT

FORMAL SEATING U-SHAPE LAYOUT

Tables are arranged in a U-shape with chairs along the outer edges. This layout is commonly used in formal meetings, facilitating eye contact and interaction among participants. It is suitable for public spaces such as Reception Areas, Lobbies, Waiting Areas, Offices, Ceremonial Spaces, etc.



Figure 100 Formal seating U-shape with space

THE FINAL DESIGN DEVELOPMENT

INFORMAL SEATING LAYOUT

Informal seating arrangements are primarily interactive, but privacy is also considered in some contexts, such as seating that is spaced slightly apart or using cushions that provide a small private space such as Living Rooms, Lounges, Cafés, Break Rooms, Homes, Offices, Recreational Areas, etc.



Figure 101 Informal seating with space

THE FINAL DESIGN DEVELOPMENT

CASUAL SEATING LAYOUT

The seats are arranged so that you can sit and lie down. The benches or seats are arranged with a small distance between them such as in Family Rooms, Open-Plan Living Areas, Porches and Verandas, Guest Room, etc.



Figure 102 Casual seating with space

THE FINAL DESIGN DEVELOPMENT

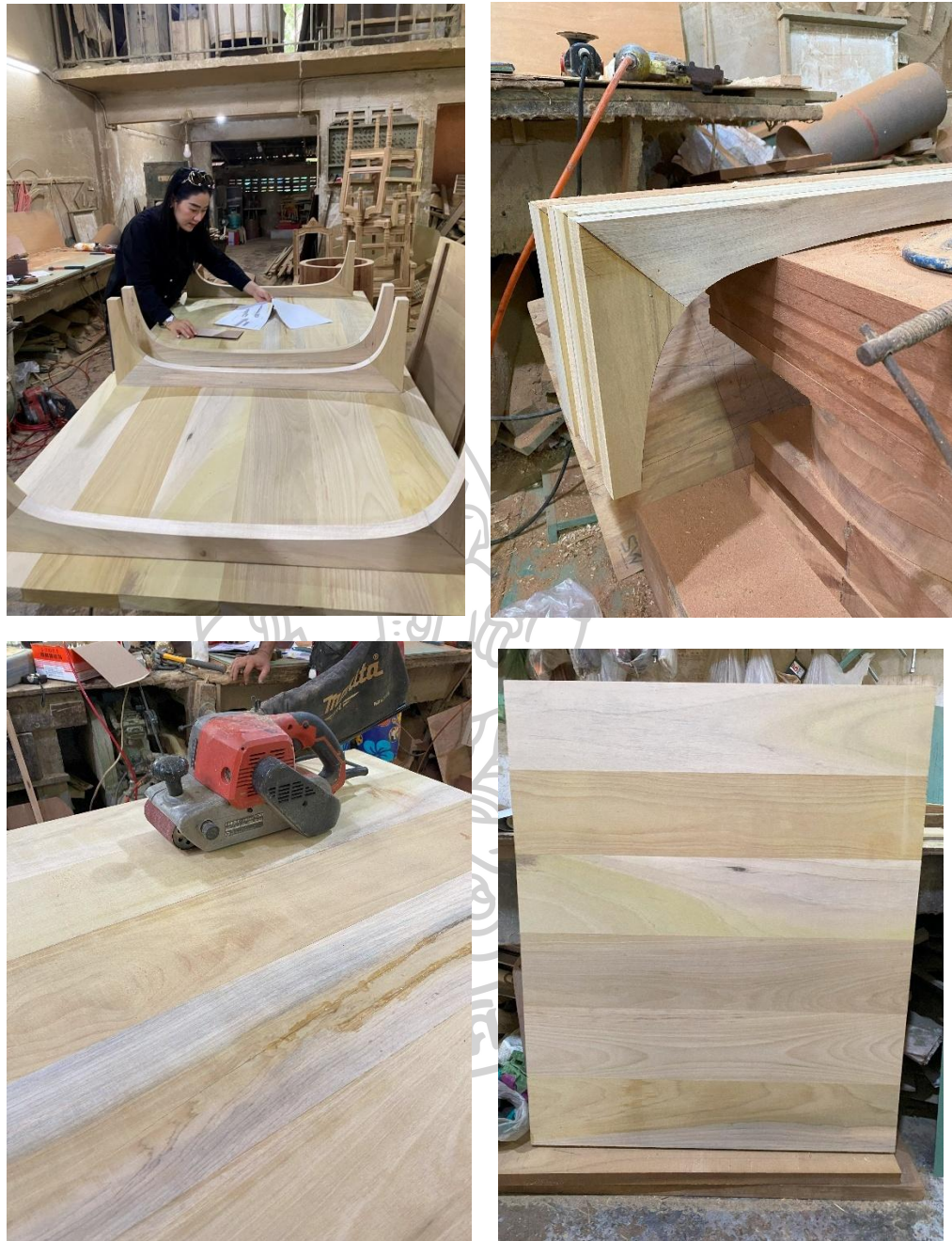


Figure 103 The process of the final design development

THE FINAL DESIGN DEVELOPMENT

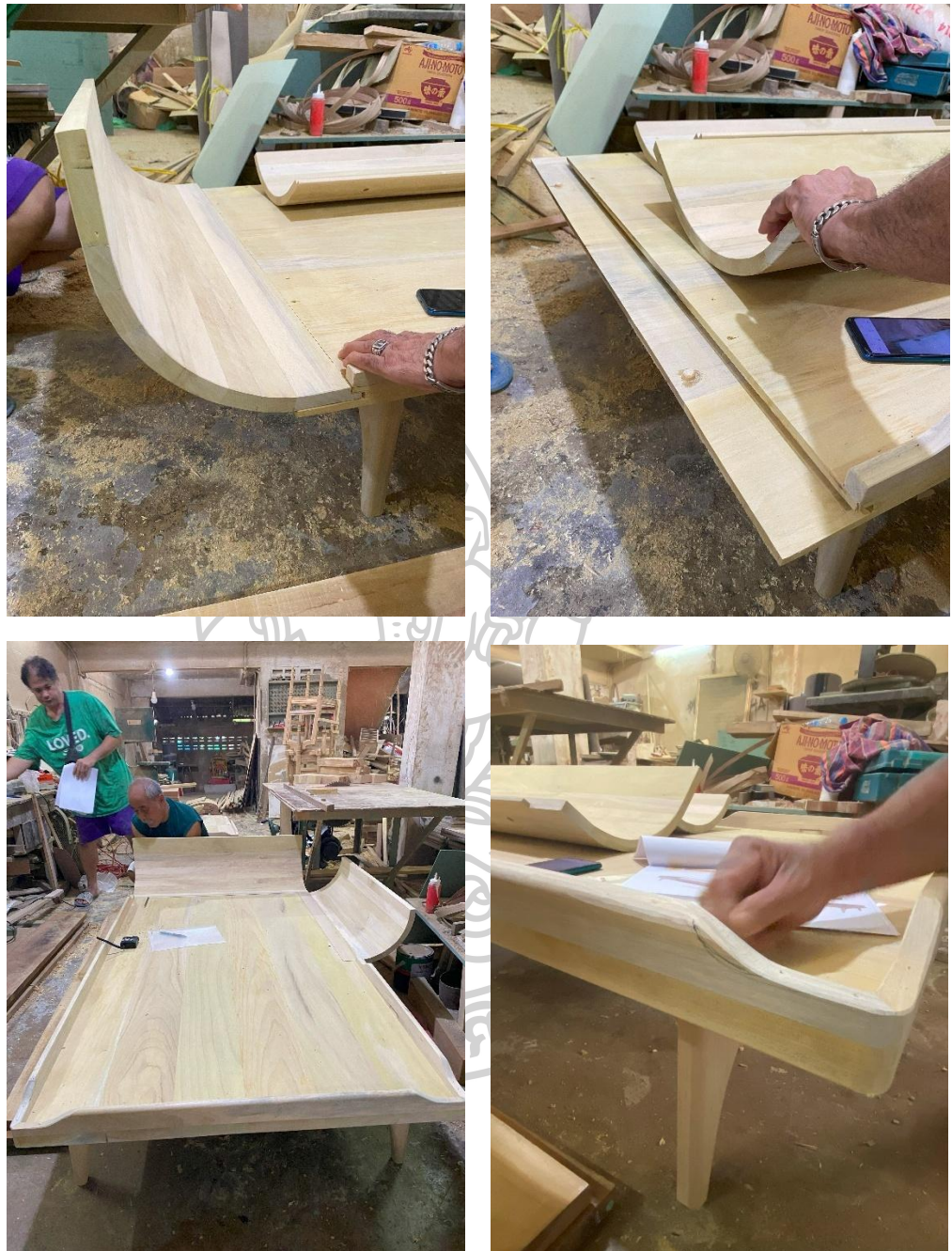


Figure 104 The process of the final design development

THE FINAL DESIGN DEVELOPMENT

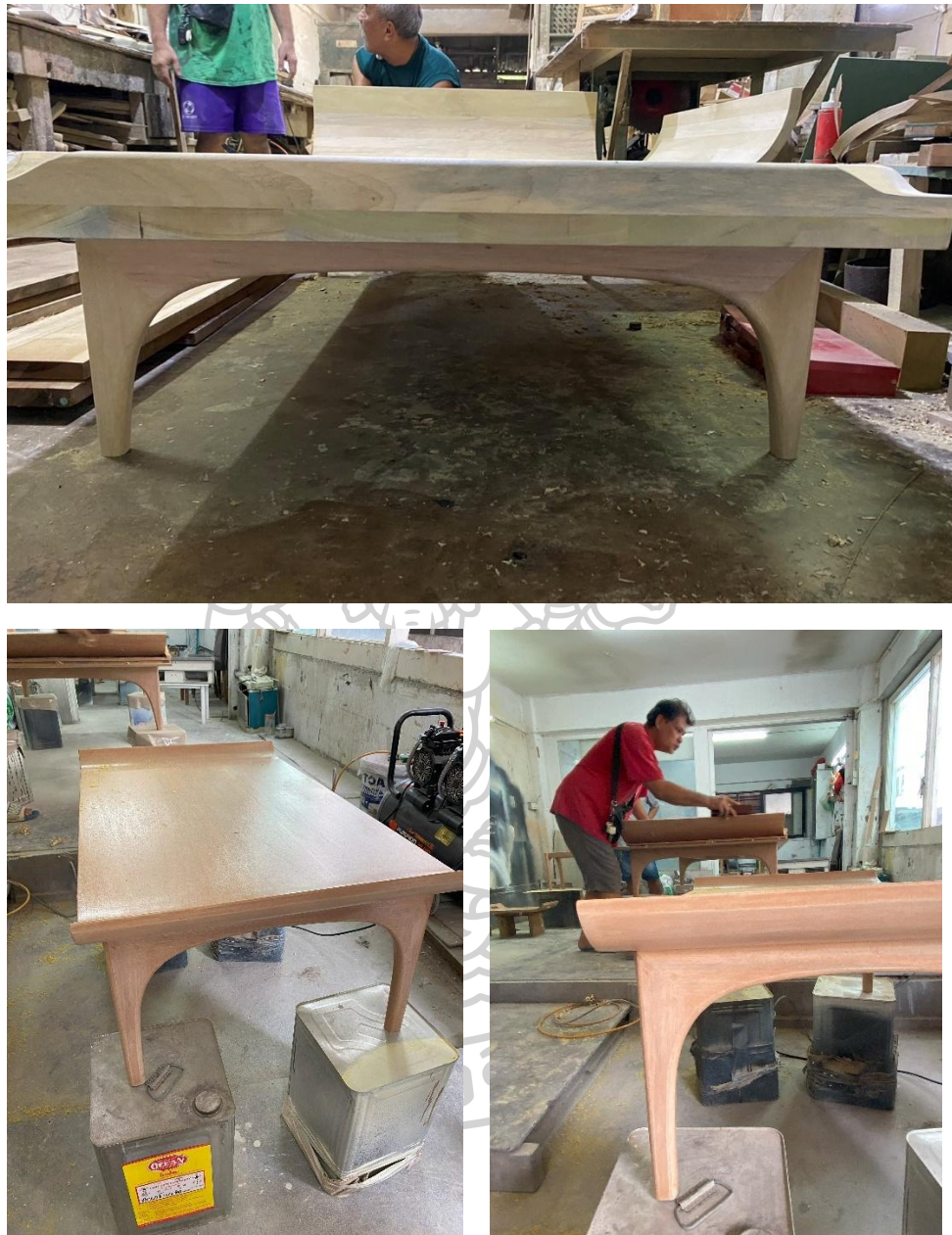


Figure 105 The process of the final design development

THE FINAL DESIGN DEVELOPMENT



Figure 106 The process of the final design development

THE FINAL DESIGN DEVELOPMENT



Figure 107 The process of the final design development

DESIGN COMPLETE



Figure 108 Design Complete: Daybed, Bench

DESIGN COMPLETE



Figure 109 Design Complete: Daybed, Bench

DESIGN COMPLETE



Figure 110 Design Complete: Daybed, Bench

DESIGN COMPLETE



Figure 111 Design Complete: Daybed, Bench

DESIGN COMPLETE



Figure 112 Design Complete: Armchair, Lounge chair, Easy chair, Stool

DESIGN COMPLETE



Figure 113 Design Complete: Stool

DESIGN COMPLETE



Figure 114 Design Complete: Coffee table

DESIGN COMPLETE



Figure 115 Design Complete: Side table

DESIGN COMPLETE

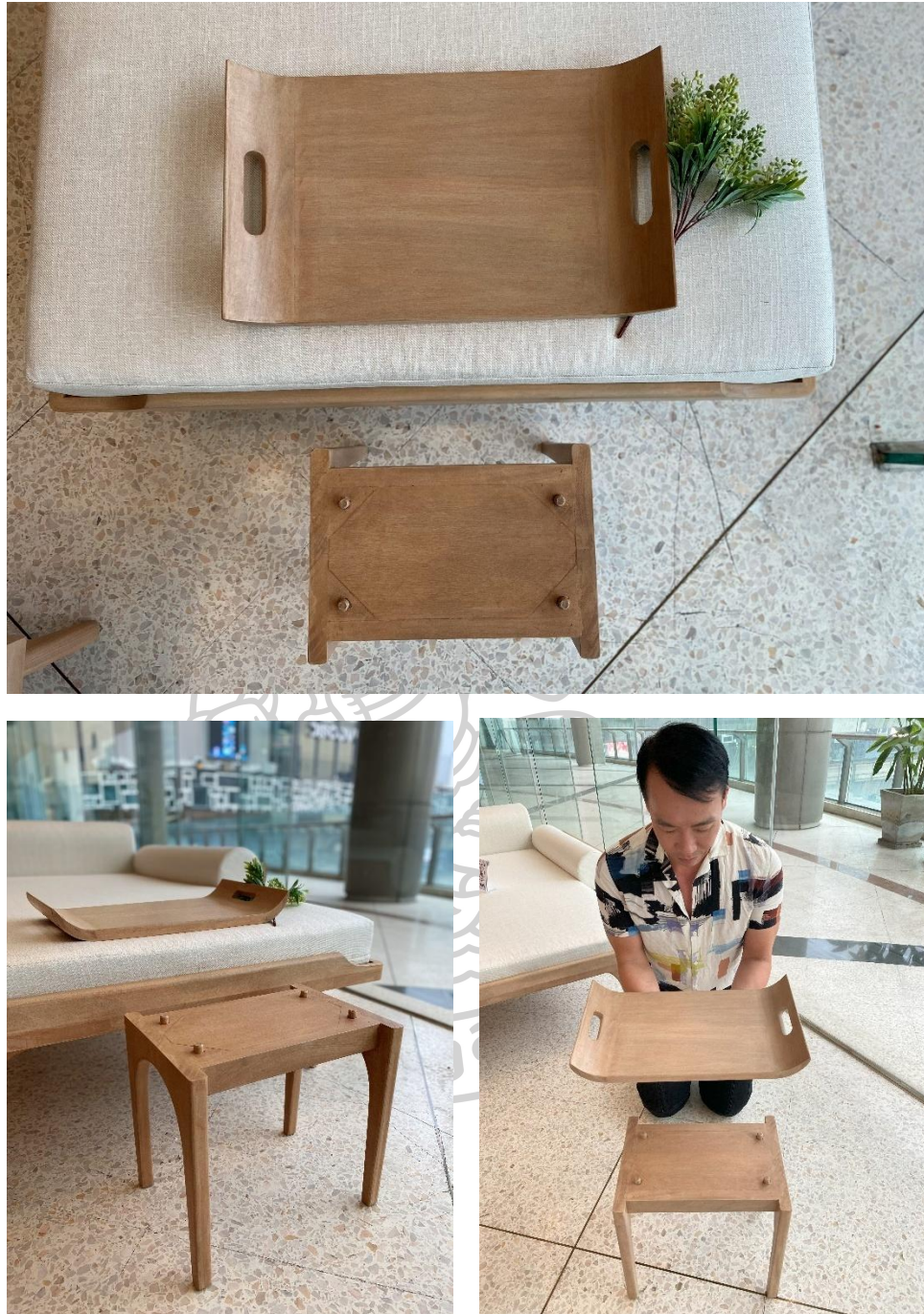


Figure 116 Design Complete: Side table

DESIGN COMPLETE

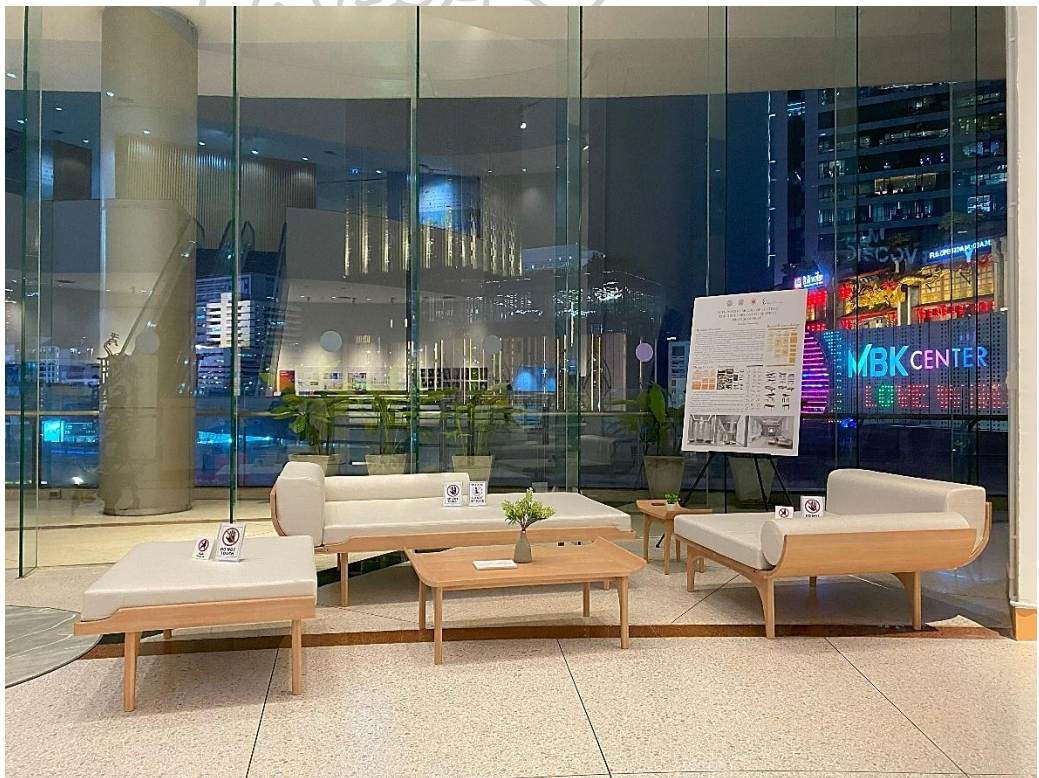


Figure 117 Design Complete

4.4 Research Outcome

The public space experiment yielded the following results: alternative model of seating: the development of seating from Siam seat can accommodate up to 10 individuals and offers multiple seating positions to cater to a variety of preferences. This design reflects traditional Thai seating culture while providing flexibility, comfort, and adaptability to meet the diverse needs of users in public and communal spaces. With this seating solution, users can experience an ideal blend of cultural identity and modern functionality, enhancing group interaction and relaxation in a uniquely Siam seating-inspired environment.



Figure 118 Outcome

OUTCOME



Figure 119 Outcome

OUTCOME

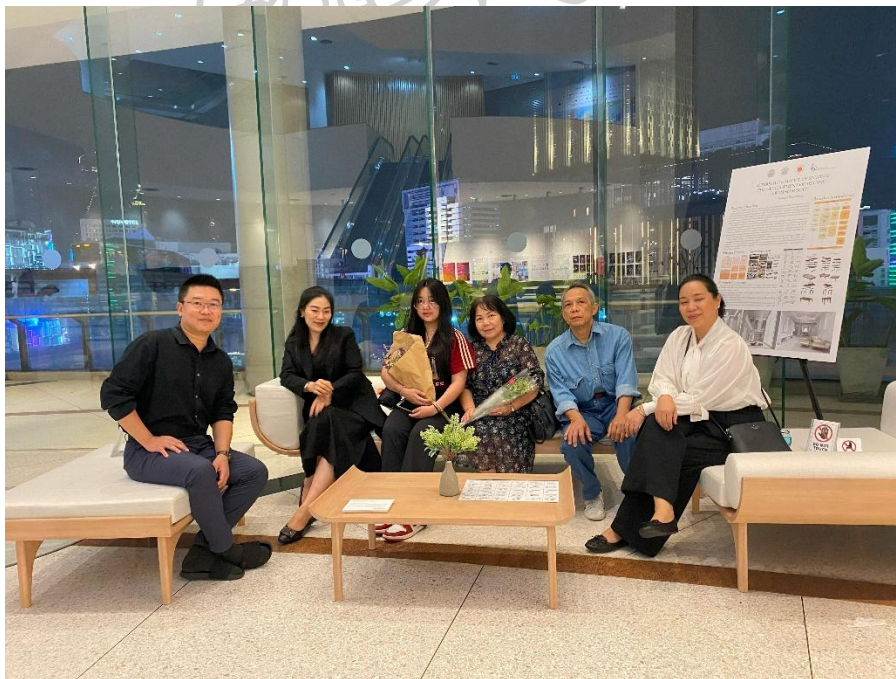


Figure 120 Outcome

CHAPTER 5

CONCLUSION AND SUGGESTIONS

Conclusion Diagram

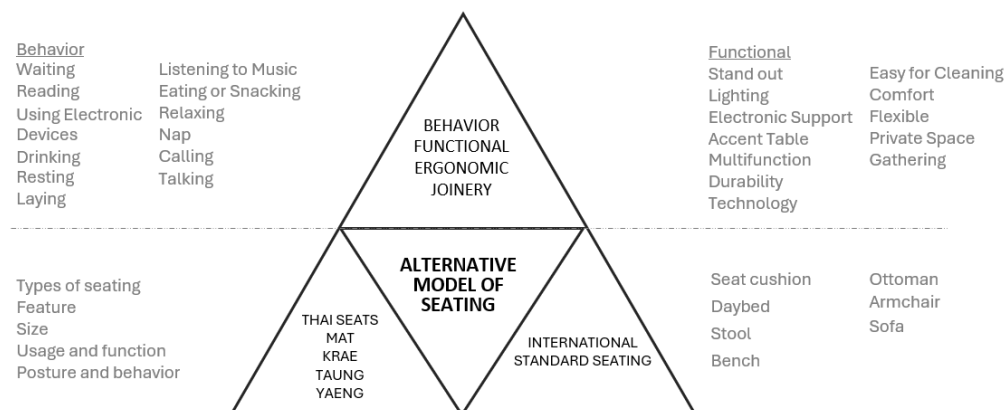


Figure 121 Conclusion Diagram

Conclusion

The development of an alternative seating model derived from the traditional Siamese seat illustrates the intricate relationship between cultural heritage and contemporary design. The research highlights the continued relevance of Siamese seating customs, which reflect a deep connection to Thai cultural values such as simplicity, modesty and respect. By integrating these traditional elements with modern design principles, the new seating model fulfils both functional and aesthetic requirements, providing greater comfort and usability in public spaces.

The innovative approach of this research builds a bridge between historical tradition and modern requirements and shows that traditional seating concepts can be successfully adapted to contemporary contexts. This new model is not only a tribute to the rich heritage of Siamese seating, but also a reinterpretation that meets the changing needs of today's users. The result is a seating solution that respects cultural traditions while incorporating modern design advances.

Suggestions

Further Research on User Experience: To refine and optimize the new seating model, further research should be conducted to obtain feedback from different user groups. This will help to understand how different populations interact with and perceive the seating to ensure that the design meets a wide range of needs and preferences.

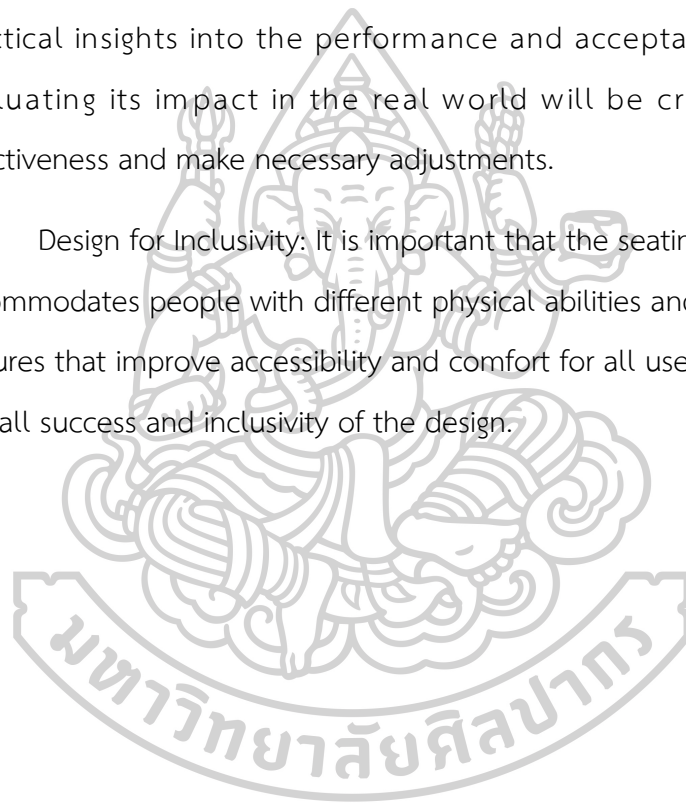
Integration with Modern Technologies: Exploring the integration of modern technologies such as ergonomic adjustments and smart materials could improve the functionality and comfort of the seating model. Exploring how these technologies can be harmoniously integrated without compromising traditional aesthetics could provide valuable insights for future developments.

Cultural Adaptation and Localization: Although the model is rooted in Siamese tradition, exploring adaptations for other cultural contexts could broaden its applicability. Conducting studies on how similar principles can be adapted to other cultural settings could provide opportunities for wider application and cross-cultural design innovation.

Sustainability Considerations: The emphasis on sustainable materials and production methods in the development of the seat model is in line with today's environmental concerns. Investigating the use of environmentally friendly materials and processes could further increase the model's relevance and appeal in today's market.

Public Space Implementation: Pilot projects in various public spaces such as parks, community centres and cultural institutions could provide practical insights into the performance and acceptance of the model. Evaluating its impact in the real world will be crucial to assess its effectiveness and make necessary adjustments.

Design for Inclusivity: It is important that the seating model accommodates people with different physical abilities and needs. Including features that improve accessibility and comfort for all users contributes to the overall success and inclusivity of the design.



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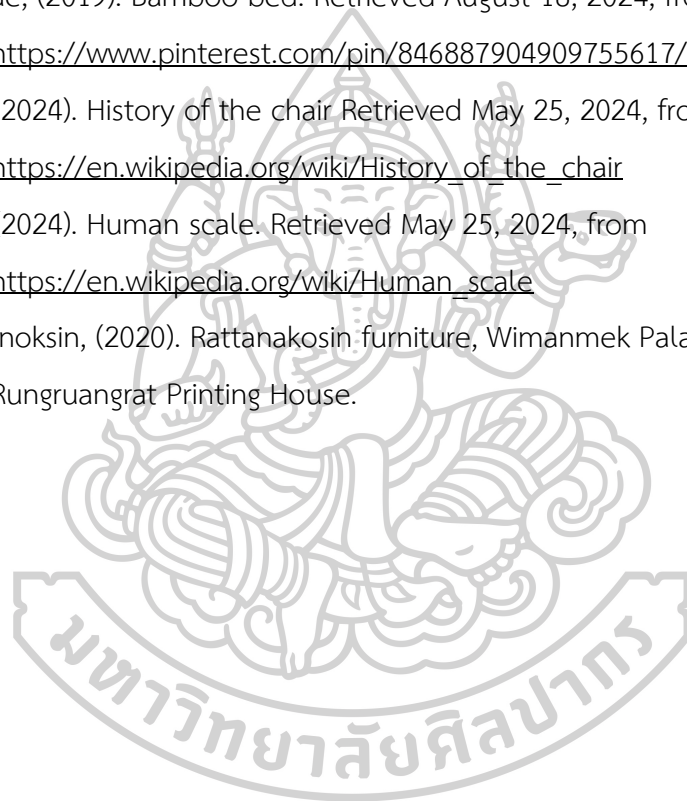
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