

# The furniture Prototype Design from Materials and Lam Pan mats in Ban Kho, Prachinburi Province

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The objective of this research is 1) to study the design of furniture placement for interior buildings; and 2) to evaluate the furniture design development for the creative library of Wat Chai Mongkhon School, Prachinburi Province, Thailand. The researcher studied information based on theories and related academic concepts. The methodology of qualitative research based on observation, inquiry, interviewing with prospective teachers, students, community representatives and 50 designers was utilised. The researcher had simulated three-dimensional images in order to create models for target groups and analyse problems. To find out the demand and synthesis of information, the collected data was classified into tables of numbers that calculated the mean, percentage and standard deviation. The findings were that target groups (teachers, students, community representatives and designers) are satisfied with both the designed furniture placement and with the creative interior design of Wat Chai Mongkhon School Prachinburi Province, Thailand at the highest level.

**Key words:** *Design, furniture, school, library*

## 1. Introduction

Bamboo has the potential to be a useful wood source for the future. Bamboo has several interesting characteristics such as it grows very quickly (can be used in 3 years), it is easy to grow and reproduce, it uses less space to grow, it's able to grow everywhere in the country and it can provide many by-products. Bamboo hoots, leaves, rhizomes, and seeds are used for food and in drug manufacture; and clumps of bamboos help hold soil together, it protects against wind, and it produces bamboo soil. The wood has a unique beautiful pattern and it is strong and tough. Moreover, the wood is easily desiccated and processed. There is a lack of research



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that looks at the development of the potential for using bamboo in suitable interior architecture (Kiaokhong, Phakkhiri, & Nanthakusol, 2004, p. 69-84).

At present, the area for growing bamboo in Thailand is around 500,000 Rai and people mostly grow *Dendrocalamus Asper Backer*, which is mainly for the sale of buds. Most of the planted areas are in Prachinburi and the nearby provinces (Department of Agricultural Promotion, 1999).

Previous research on the use of bamboo shows it has been utilised for industrial proposes, design and construction of houses, home appliance tools, consumption, and more. Bamboo can be planted in many parts of Thailand and it is a useful plant in many ways. It is easy to find and low cost. The important thing is all parts of the bamboo can be used.. In terms of living, it is popular to use natural materials such as bamboo and perennial plants. Building a house according to Thai culture, is easy with bamboo because it is easy to find and people spend less money on it. Using bamboo to build a house called “Ruen Khruang Phook”. Most of them use thick bamboo which is durable and resistant to weather, sun, and rain to build up the house, roof structures, poles, beams, doors, windows, stairs, fences, and floors. Houses that use bamboo as a material will provide cooling and comfort because the air is well ventilated. A large number of wicker products made in the local community are bamboo woven products because bamboo is the local material. In the past, bamboo was used for household tools and as a tool for catching animals. Nowadays, some groups of people use bamboo for their extra work, some of them use it for their main occupations, and there is a combination of manufacturers by forming a community product group or community enterprise group which helps to generate income for family and community.

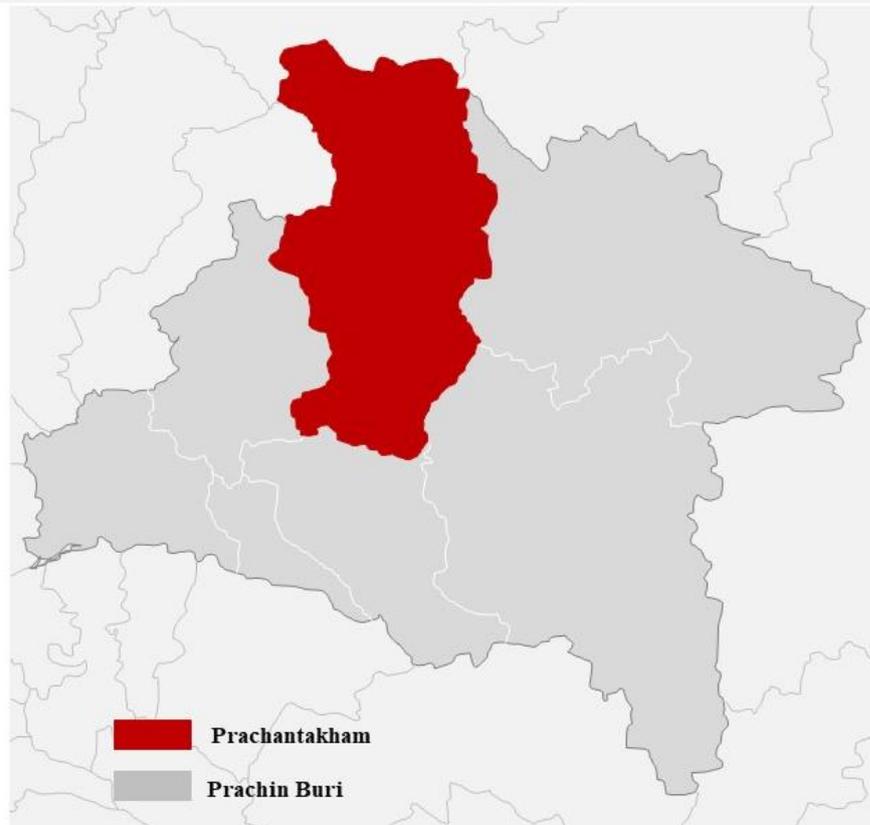


Figure 1. Image of the location of Prachantakham District Prachinburi Province, Thailand

Source: Thongtep Sirisoda, 2021

In the survey area Prachinburi province, where preliminary data was collected it was found that bamboo is grown in a bamboo garden and imported in for business. Ban Kho villagers have processed bamboo to be a Lam Phan mat. From the survey, it was found that sales have little profit and no value. Their product lacked an attractive design. The market nowadays requires an identity for cultural products and this plays an important role in the design of the product. These things will create knowledge from the extension of local wisdom which is a cultural capital. If local people are able to create a unique identity for the work, it is considered to be an advantage for business. The creation of the product is invented with scientific principles and modern knowledge to help develop the country, Thailand with self-reliance. This is the way to create value for Lam Phan mats from Ban Kho village, as well as enhance the development potential of the local community, with the support of the local community and community enterprise.

From the above problems, the researcher realised the importance of upstream, middle, and downstream development which will increase farmers' incomes and provide more marketing channels. All of the above operations are for the purpose of bringing knowledge of producing Lam Phan mats to be a guideline for developing creative furniture prototype design for the library by using Lam Phan mats from Ban Kho village. The design is for Wat Chai Mongkhol School, Prachinburi province. Wat Chai Mongkhol is one of the schools in the area that has

suffered fire damage to the school building and the school is lacking budget and materials for its renovation. The creative development of furniture prototype designs for the library by using Lam Phan mat of Ban Kho village for Wat Chai Mongkol school, is therefore responsive to community and local needs. This will bring benefits to the development of the area and provide farmers with a career and enable them to earn more income from the development of more diverse and innovative product styles. This is also useful for a school in need such as Wat Chai Mongkol school and it promotes quality of life which is the important foundation for further development of Thailand.

## 2. Purposes

2.1 The objective of this research is to conduct the interior design of furniture placement for buildings.

2.2 The objective of this research is to evaluate the furniture design development for the creative library of Wat Chai Mongkhon School, Prachinburi Province, Thailand.

## 3. Method

The fire damaged in one room of the school library and two other rooms were slightly damaged. The researchers and community representatives therefore want to start creating a furniture prototype design that is using Lam Pan mat of Ban Kho village for the new classroom and library.



Figure 2. Image of the actual location before the renovation

Source: Thongtep Sirisoda, 2021



Figure 3. The process of cutting bamboo into halves and later hammered, weaving into a Lam Pan mat

Source: Thongtep Sirisoda, 2021



Figure 4. The process of making wood framing sheet for weaving into a Lam Pan mat  
Source: Thongtep Sirisoda, 2021



Figure 5. covering the mat and applying glaze  
Source: Thongtep Sirisoda, 2021

Interviews with students, teachers, community representatives, designers, and Lam Pan of Ban Kho villagers were carried out with a total of 50 interviewees and information was gathered about the pattern production process, the existing pattern of Lam Phan mat, and knowledge of production processes in various forms. This information was gathered in order to develop a form of furniture from Lam Pan mat design, which is weaving group formed by gathering people in the community to lead the making of handicrafts. Local wisdom was used as a design guideline for product development by adhering to principles of sustainability and community development to generate income and careers for the community (Pruittikomol, & Thangthong, 2014).

From Lam Phan mat of Ban Kho village, Village no.1, Ban Kho, Koh Loi sub-district, Prachantakham district, Prachinburi province. Using Lam Pan mat to create a furniture prototype design for Wat Chai Mongkol, Prachinburi province. Creative design for Library furniture prototype designs from 3 types; (1) give prototype designs to experts, population, and sample group, (2) conduct an evaluation to select one prototype design and make improvements as suggested by experts, bring the evaluation results to summarize the mean ( $\bar{X}$ ), standard deviation (S.D.), and interpret the assessment.

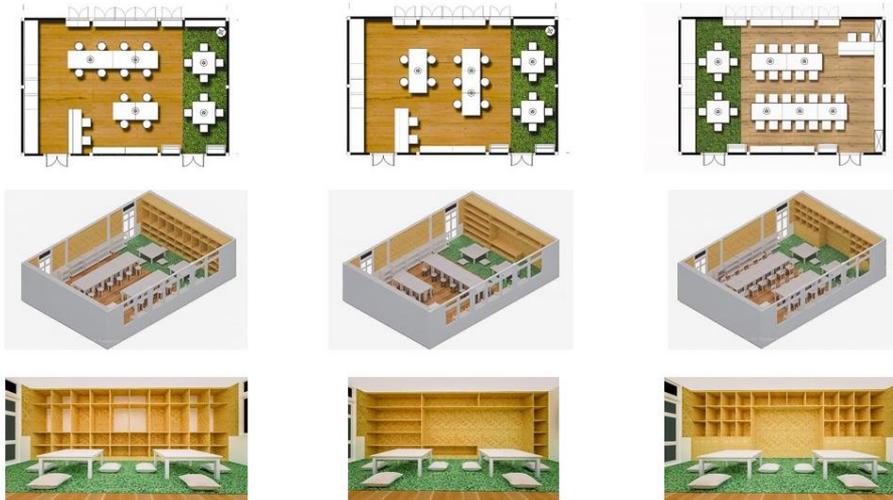


Figure 6. 3 styles of interior design and placement of furniture in the library environment  
Source: Thongtep Sirisoda, 2021

Figure 6 shows a prototype design evaluation by experts, the population, and a sample group. The evaluation result indicates a mean of pattern 3 equal 4.30 which is in the very appropriate level, followed by pattern 1 and pattern 2 with mean of 4.27 and 4.13, respectively. Therefore, the researchers bring a prototype design pattern 3 (and receive the highest evaluation score) to produce 1 pattern.

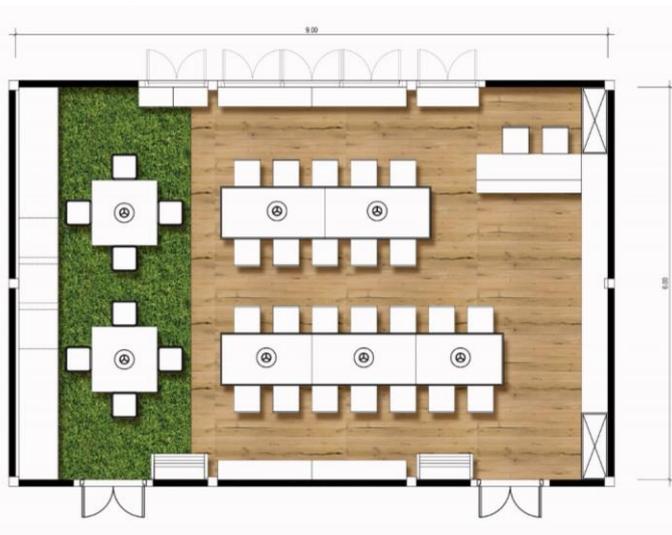


Figure 7. Floor plan, furniture placement, indoor environment  
Source: Thongtep Sirisoda, 2021



Figure 8. Scenery, design, placement, furniture, indoor environment  
Source: Thongtep Sirisoda, 2021



Figure 9. View, design, placement, furniture, indoor environment  
Source: Thongtep Sirisoda, 2021



Figure 10. The furniture prototype design from materials and Lam Pan mats in Ban Kho  
Source: Thongtep Sirisoda, 2021

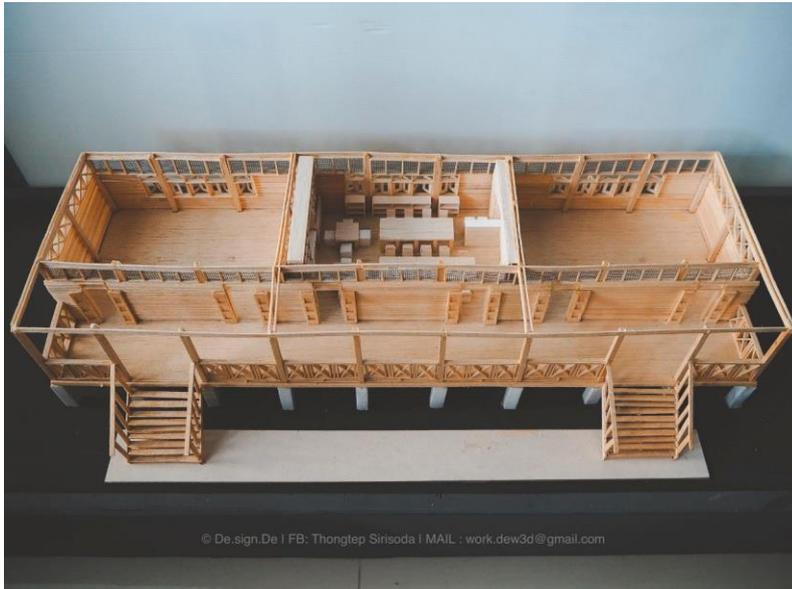


Figure 11. Furniture positioning design model, indoor environment  
Source: Thongtep Sirisoda, 2021

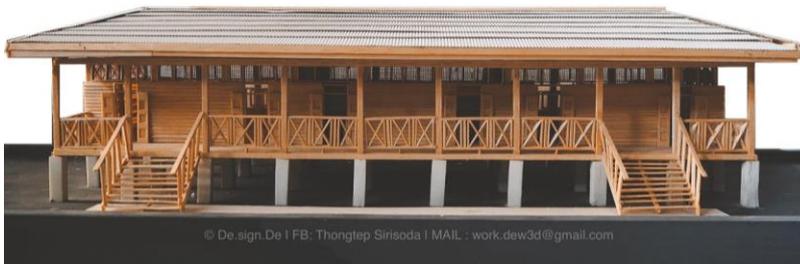


Figure 12. Building exterior model  
Source: Thongtep Sirisoda, 2021

#### 4. Results

4.1 Design the interior architecture for placement of furniture for the library in the school building according to the need of Wat Chai Mongkol school, Ban Kho village, Village no.1, Ban Kho, Koh Loi sub-district, Prachantakham district, Prachinburi province for further exploration of opinions.

4.2 Use observation form, questionnaires, and interview form to revise the design of placement of furniture and wall decoration pattern for Wat Chai Mongkol school, Ban Kho village, Village no.1, Ban Kho, Koh Loi sub-district, Prachantakham district, Prachinburi province.

4.3 Correct placement of furniture design and design patterns of interior architecture of the library in school building according to feedback from the community, target group, teachers,

students, community representatives of Wat Chai Mongkol school, Ban Kho village, Village no.1, Ban Kho, Koh Loi sub-district, Prachantakham district, Prachinburi province.

4.4 Summarise the pattern design to make the design and select materials that are suitable for interior architecture of the library in the school building.

## 5. Conclusion

This research aimed to study information about the development guidelines for a creative furniture prototype design for the library of Wat Chai Mongkol school, Ban Kho village, Village no.1, Ban Kho, Koh Loi sub-district, Prachantakham district, Prachinburi province by using the Lam Phan mat design of Ban Kho village with the purpose of creating careers, strengthening the community, promoting local wisdom, and developing human resources.

5.1 Study about the guidelines for the development of creative furniture prototype design for the library of Wat Chai Mongkol school, Ban Kho village, Village no.1, Ban Kho, Koh Loi sub-district, Prachantakham district, Prachinburi province by using Lam Phan mat of Ban Kho village with the purpose of studying furniture design in the school building. There are three patterns from an arrangement of research-designed furniture and the target group chose pattern 3 which has a systematic pattern, layout, and structure that responds to the use of space, the behavioural dimensions along with the physical dimensions. There are human behavioural factors that must be taken into account to design for the target group in order to meet the needs of educational activity (Petchranon, 2002).

Table 1. Satisfaction assessment analysis

No	List	Number (people)	Library design pattern	
			Mean	Standard deviation
1	Teachers	2	3.96	0.032
2	Students	20	4.00	0.48
3	Community representatives	16	4.00	0.256
4	Designer	2	3.98	0.032
5	Villagers of Lam Pan Group Ban Kho	10	3.64	0.3
	Total	50	3.916	0.22



From the evaluation of the population and sample, it was found that the majority of the target group used the questionnaire statistical value of 50 people. The level is very good, the mean is ( $\bar{X} = 3.916$ ,  $SD = 0.22$ ).

5.2 The results of the study on designing evaluation guidelines for the development of creative furniture prototype designs for the library from Ban Kho Lam Pan mat material, Wat Chai Mongkhon School, Prachinburi Province presented Village No. 1, Ban Kho, Koh Loi Sub-district, Prachantakham District Prachinburi. The researcher has prepared a model for surveying the overall satisfaction of respondents, these was evaluated at a very good level. The mean was ( $\bar{X} = 3.916$ ,  $SD = 0.22$ ) based on the design pattern. The study was conducted on bamboo transformed by using coordination techniques in order to integrate and convey the knowledge gained back to the community for supporting a sustainable career. Therefore, there were existing raw materials and took into development those raw materials as valuable products. There should be understanding of customer needs and distribution channels to reduce various risks if the community wants to take action or develop their own products for further development, so it is easy to move on. In summary, this study focused on prototype models for product development based on the concept of community sustainability and development to generate income and career to the villagers.

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