Negotiation in Design: The Participatory Process in Designing Healthcare Facilities of a Public Hospital

ต่อรอง/ออกแบบ: กระบวนการมีส่วนร่วมในการปรับสภาพแวดล้อมของโรงพยาบาลในสังกัดของรัฐบาล

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Abstract

Healthcare policy and organizational system engaging with public health facilities in Thailand are directly and rigidly controlled by the Ministry of Public Health based on its centralized practice. As part of the inflexible system, public hospitals across the country are forced to accept standardized building designs provided by the Ministry. Consequently, several hospital buildings cannot respond properly to users' requirements, including the needs of hospital personnel. By regarding hospital staff as an important part of healthcare service, this study examines perceptions, expectations and actions provided by a group of hospital users while they took part in the participatory design process. The study aims to gain a better understanding of how the participatory approach is implemented in design interventions for the improvement of public hospital environments built from standardized designs and run by the centralized organization system. A ninety-bed community hospital was selected and used as the setting of this study. Participant observations were conducted while groups of staff from a variety of sections in the hospital collaborated with designers through meetings and a series of activities to redesign the spaces of the Outpatient Department (OPD). The study shows that the hospital personnel expressed their needs to change their standard workplace to a more supportive environment in which work performances and their well-being are fostered. Also, the participatory approach allows two-way learning dialogues between hospital personnel and designers. The approach provided opportunities to the personnel to share their experiences with their colleagues and learn more about their workplace. Furthermore, it reflects that the negotiation process is a key to the success of the improvement of the hospital's built environment. The causes of negotiation in a wide range of forms and scales are possibly involved in the design process.

Keywords
Built Environment
Participatory Design
Healthcare Facilities
Public Hospital
Well-being

บทคัดย่อ

นโยบายด้านสาธารณสุขและระบบการให้บริการด้านสุขภาพของไทยถูกกำหนดและควบคุมโดยตรงจากกระทรวงสาธารณสุข ซึ่งมีผลทำให้รูปแบบของโรงพยาบาลในสังกัดของรัฐบาลส่วนใหญ่ในประเทศไทย ถูกออกแบบและพัฒนาจากแบบมาตรฐานที่ออกแบบไว้โดยกองแบบแผน กรมสนับสนุนบริการสุขภาพ กระทรวงสาธารณสุข ซึ่งอาจไม่สามารถตอบสนองความต้องการและการใช้ประโยชน์พื้นที่ของผู้ใช้อาคารอย่างแท้จริง โดยเฉพาะอย่างยิ่งความต้องการของบุคลากรและเจ้าหน้าที่ของโรงพยาบาล ซึ่งถือเป็นส่วนสำคัญของระบบการให้บริการด้านการดูแลสุขภาพ บทความนี้มุ่งเน้นการศึกษาการรับรู้ ความต้องการ ความคาดหวัง และการเปิดโอกาสให้มีส่วนร่วมในการออกแบบสิ่งแวดล้อมสรรค์สร้างเพื่อสุขภาวะของโรงพยาบาล ผ่านกระบวนการออกแบบอย่างมีส่วนร่วม (Participatory Design) โรงพยาบาลแหลมฉบังซึ่งเป็นโรงพยาบาลชุมชนในสังกัดของรัฐบาลขนาด 90 เตียงได้ถูกเลือกเป็นพื้นที่ศึกษา มีการดำเนินงานผ่านการประชุมกลุ่มย่อยและการร่วมทำกิจกรรมเชิงปฏิบัติการในการออกแบบปรับปรุงพื้นที่ผู้ป่วยนอก (Outpatient Department) ของโรงพยาบาลโดยบูรณาการเข้ากับแนวคิดการสร้างสุขภาวะใน 4 มิติ ได้แก่ สุขภาวะทางกาย ใจ สังคม และจิตปัญญา จากการศึกษาพบว่า บุคลากรของโรงพยาบาลสามารถวิเคราะห์พฤติกรรมการทำงานของตนเอง และสะท้อนความต้องการที่แท้จริงในการใช้ประโยชน์พื้นที่ อันนำไปสู่การสร้างสภาพแวดล้อมที่ส่งเสริมประสิทธิภาพในการทำงานและสนับสนุนการมีสุขภาวะที่ดี นอกจากนี้ การดำเนินงานผ่านกระบวนการออกแบบอย่างมีส่วนร่วมนั้นยังนำไปสู่การสร้างการเรียนรู้สองทางระหว่างบุคลากรของโรงพยาบาลและผู้ออกแบบอาคาร เปิดโอกาสให้บุคลากรแบ่งปันประสบการณ์ และเรียนรู้พฤติกรรมในการทำงานของเพื่อนร่วมงาน ดังนั้น การต่อรองหรือเจรจาจึงเป็นหนึ่งในปัจจัยสำคัญในกระบวนการการออกแบบสิ่งแวดล้อมซึ่งนำไปสู่การออกแบบสิ่งแวดล้อมสรรค์สร้างของโรงพยาบาลในสังกัดของรัฐบาลให้ดียิ่งขึ้น

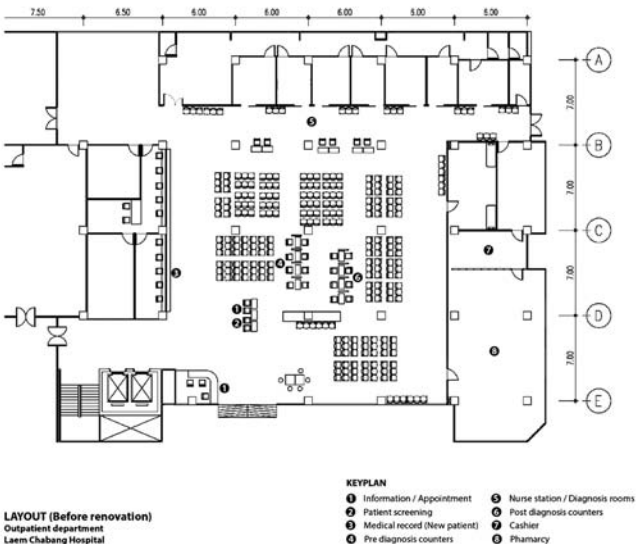
คำสำคัญ
สิ่งแวดล้อมสรรค์สร้าง
กระบวนการออกแบบอย่างมีส่วนร่วม
ส่วนให้บริการด้านสุขภาพ
โรงพยาบาลในสังกัดของรัฐบาล
สุขภาวะ

1. Introduction

A number of researches suggest a strong association between well-being and the physical environment in which a person lives or receives healthcare services (Gesler et al., 2004; Rollins, 2004). The proper design of healthcare facility is, therefore, essential to create an effective well-being environment. In the case of public hospitals in Thailand, a majority of public healthcare building designs have been controlled and supervised by the Design and Construction Division under the Ministry of Public Health (MOPH). As the environment of each public hospital is manipulated remotely by design personnel who are generally stationed in the central office, there are limitations that a variety of the specific requirements and on-site situations essential to facility design may not be well recognized and understood. The Design and Construction Division's lack of professional design staff, limited budget and a generally short period given for each design and construction project usually result in a building design process frequently based on "templates" of available standard healthcare planning and design with certain adjustments to fulfill special requirements for individual cases rather than an entirely new customized design for each specific case and site. Although hospitals have an opportunity to clarify their specific spatial requirements based on their regular daily workflows, it seems that such submitted requirements and site-specific issues often have little to do with the overall design. Additionally, while medical concepts and technologies as well as lifestyles continues to change, certain design templates of hospital buildings have not been revised for more than a decade. Such problems lead to a limitation in designing and operating the built environment for holistic well-being.

(Source: The Author)

Figure 1. Outpatient Department (OPD) of Laem Chabang Hospital.



(Source: The Author)

Figure 2. Layout showing service stations and waiting area in Laem Chabang's OPD.

This study hypothesizes that within the limitation of the rigid organizational system of MOPH, participatory design process can be an approach to allow hospital personnel and designers to break through the boundary between professionals and laypeople and to succeed in improving the hospital environment. Furthermore, by observing the actors involving in the process, novel knowledge related to healthcare design can be revealed. To test the approach, a participatory process have been carried out as a part of design interventions of outpatient department (OPD) for a community hospital in Thailand. Laem Chabang Hospital, a ninety-bed community hospital, was selected as a case study to represent common physical public hospitals operated by the MOPH (see Figure 1 and 2). A majority of its patients and users are local people and immigrant labors from nearby countries, especially Burmese. In the participatory design process, a group of hospital personnel consisting of executive directors, medical staffs, and facility managers were asked to collaborate with the designers through meetings and a series of design activities in order to integrate four dimensions of well-being (i.e. physical, mental, social and spiritual) into tangible forms. As the design process was conducted, knowledge and experiences provided by participants were recorded and gathered as research data which were later analyzed and reported in this paper. The study principally focuses on the perceptions, expectations, responses and actions reflected by hospital personnel during their involvement in meetings and activities organized as a part of participatory design process.

Mroczek et al. (2005) point out that hospital personnel, both clinical and non-clinical, are a group of key stakeholders in the healthcare design process; and the way they perceive their workplace may affect their job performance as well as their physical and mental well-being. Accordingly, this study aims to gain the insight how the hospital used and managed their work spaces, and their satisfaction of the spaces in such a setting - a public community hospital. According to this purpose, certain questions were raised: How do the hospital personnel feel about their work spaces? Are there any problems caused by conditions of work space that disturb their daily life? And what are their desired work spaces? Also, this study aims to understand how the hospital staffs deal with the design and construction limitations framed by the organizational system. The novel knowledge presented in this paper would contribute to the accumulation of knowledge in the field of healthcare design.

2. Research Method

This study is part of a research project titled "Built Environment for Health Case Study: Healthcare Facilities" which is granted by Thai Health Promotion Foundation. The main project aims to acquire novel knowledge from a real practice in hospital design that emerges from collaborative activities between designers and hospital users. Correspondingly, the project members worked in two folds. First, as designers, the project team worked together with hospital users on a design intervention focusing on the improvement of the OPD spaces. In the design part, the design team considered the importance of all groups of hospital users equally. Therefore, necessary information including needs, behaviors, requirements and expectations of every user group was taken into account. However, how to gain the information from each group of users were designed and conducted differently according to specific conditions of each group. For instance, questionnaire was employed as a data collection tool for patients and family groups.

In parallel, the team members also worked as researchers who collected documents, photos and other types of research data while the design process was ongoing. In order to understand the reflections of the participating hospital personnel in this

qualitative study, the participant observation was adopted as the main method for the data collection. A wide range of hospital personnel involved in seven meetings and activities associated with the design process. Participating personnel included executive directors, doctors, dentists, nurses, as well as non-medical staff. In total, there were 23 individuals involving in this study; 15 of which participated in at least 3 meetings/activities. The data were sorted into groups and subgroups; and in this current paper, the researchers have sought to capture the dynamic of negotiation within the participatory design process.

3. Participatory Design Approach

In order to thoroughly understand the hospital personnel's needs, behavior, experience, expectation, hope and concerns regarding their built environment, this study employed participatory design (PD) as the main approach for the design process. As Sanoff (2007) suggested, in PD approach, designers view users as an expert of his or her experience. Users play active roles during the design process, and envision the future of their context from their points of view. Designers believe that users could be able to easily communicate and express their needs through activities that designers create (Sanders & Pieter, 2008). By having experts (users) involve and engage in design activities, including giving information, brainstorming and idea generation together with designers, it would lead to new insights and design opportunities. From this approach, besides brainstorming meetings, design activities were created to enable the hospital personnel to participate in the design process, which provided tools to help the participants to express their desires and experiences. Three activities were created: (3.1) My Space, (3.2) Snap & Share, and (3.3) Dream Hospital.

Through a series of participatory workshops, the design team intensively gained a better understanding of the overall hospital environment and healthcare service procedures. My Space and Snap & Share activities revealed what quality of built environment the hospital personnel preferred and their concerns. The designers and the personnel, then, prioritized issues and problems raised from the discussion relevant to enhancing well-being environment. They agreed to select the outpatient department (OPD) for design intervention, since the OPD was considered as a core of primary medical services, connected with other departments and located at the front of the hospital.

3.1 My Space: Post-it activity

(Source: The Author)

Figure 3. My Space: Post-it activity.

This activity aimed to understand the point of contact or touch point within the hospital environment where users have interactions on daily basis. Participants were divided into three groups, each consisting of doctors, nurses, hospital's executives and physical facility staff, mixed with the research members as facilitators. Large-scale hospital maps, sticky notes, markers and pens were provided. Then the users were asked about their opinions towards the hospital environment and described what they like and dislike, their expectation as well as their aspiration on the sticky notes and put them on the hospital maps (see Figure 3). They could also mark or write directly onto the map. Each group then discussed what were written, categorized the information and shared it with other groups. The method used in this activity was sticky-note frequency analysis developed by Alison Druin from University

of Maryland (Naranjo-Bock, 2012). The sticky-note frequency analysis requires users to evaluate products by writing what they like and dislike about the products on the sticky notes and paste them on the wall. Designers then look for patterns and relationships from those comments.

3.2 Snap & Share

(Source: The Author)

Figure 4. Snap & Share poster.

The Snap and Share activity employed a photo elicitation method that uses photographs to discover the implicit needs of users. Photographs are used as a communication tool between users and designers. This method has been used widely in order to understand individuals, groups of people, about beliefs, cultures, customs, norms and social interactions (Heisley & Sidney, 1991). Hospital users were requested to take photographs of places and environment within the hospital to answer 22 structured questions concerning their behaviors, experiences and feelings in relation to hospital environment and then shared their answers on social media (in this case, a Facebook page that designers have set up in advance) (see Figure 4). After all the photographs were submitted, designers and participants discussed regarding thoughts behind those photographs. There were hospital personnel from various departments, including those who had not earlier involved in the previous activity participated in this Snap and Share activity. The photographs used in the discussion helped designers gain a better understanding about the feeling, inspiration, aspiration, hope and fear regarding their hospital environment. During the discussion session, participants added more opinions, information, needs and concerns, which were not stated clearly on the social media.

3.3 Dream Hospital

(Source: The Author)

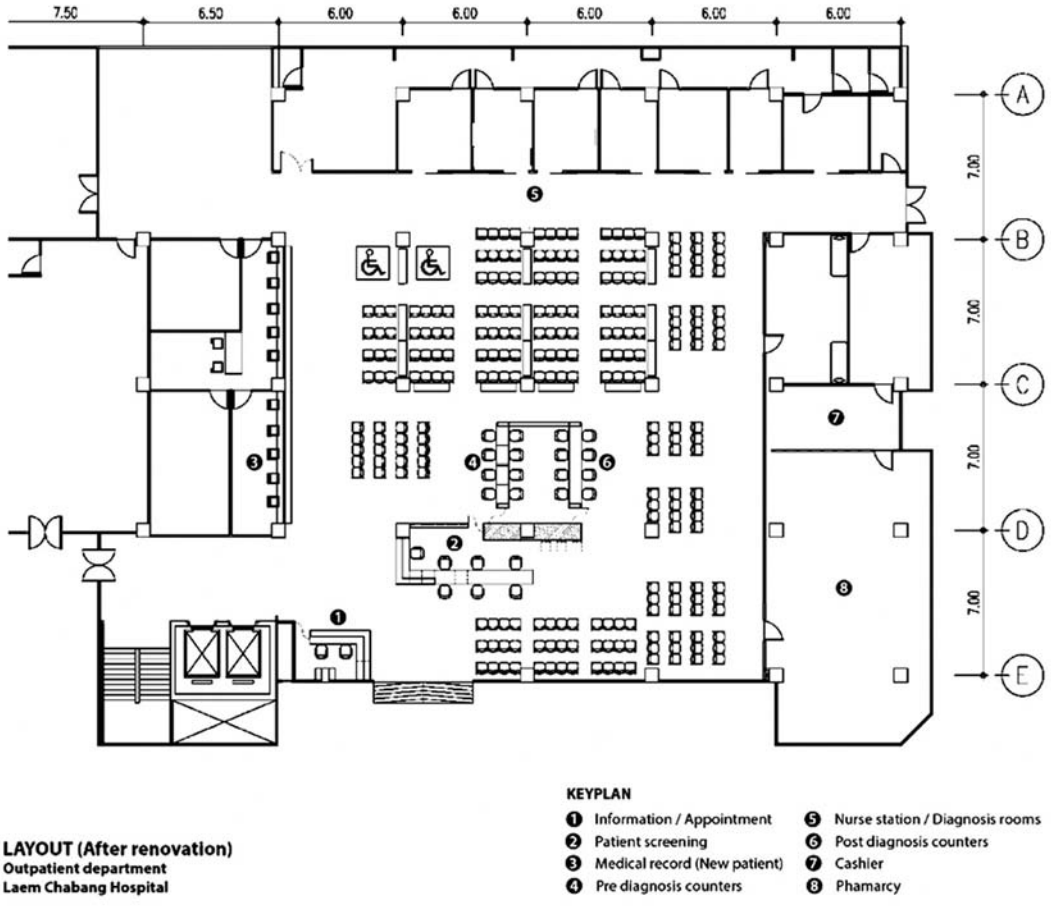
Figure 5. Dream Hospital 3D-mockup activity.

The Dream Hospital activity is to co-create a 3D-mock up of their future OPD. Participants were divided into different groups, comprised of staffs from various departments working together. Members in each group co-created the 3D-mock up using prepared tools and materials such as clay, glue, papers, cardboards, miniature furniture, etc. After finishing up the models, each group presented and explained their 'Dream Hospital' (see Figure 5). By having the physical model on hand, users were able to communicate their ideas to designers more explicitly. This activity encouraged participants to recall and reflect their personal experiences and used them to generate idea and design their dream built environment. Finally, the designers gathered all 3D-mock up models designed by participants and later used them as a basis to re-design the OPD.

The information gained from these activities was later combined with data collected from other groups of hospital users. A conceptual design was proposed afterwards. Three more meetings were set up to adjust and refine the OPD space improvement together. The proposed layout was tested the workflow, service position and space adequacy on site in a real situation before the design was finalized.

4. The Design Intervention of the OPD

According to an initial survey, there were normally 300-400 patients at Laem Chabang hospital daily. The average time each patient spent at the OPD was approximately 2 hours and 30 minutes, which inevitably causes the OPD overcrowded, especially in the morning. Following activities and discussions, several problematic issues were raised as follows: (1) an inadequate number of staffs, (2) confusion of circulation and way finding, and (3) unorganized furniture layout. Consequently, those conditions tended to reduce the staff efficiency as unnecessary moves between frequently used spaces were made as a result of an ineffective workflow. The stress and anxiety of patients and accompanied persons possibly increased due to such slow process of medical services and the confusing environment (Ulrich, 1999). Huelat (2004) notes that good way finding design promotes a healing effect because being able to understand their environment provides visitors with a sense of control and empowerment. Providing positive distraction is a potential solution supporting patients and families to get away from stressors (Ulrich, 1999).



(Source: The Author)

Figure 6. New layout of Laem Chabang's OPD: service stations and workstations have been centralized and rearranged in order to lessen congestion and provide a better workflow.

(Source: The Author)

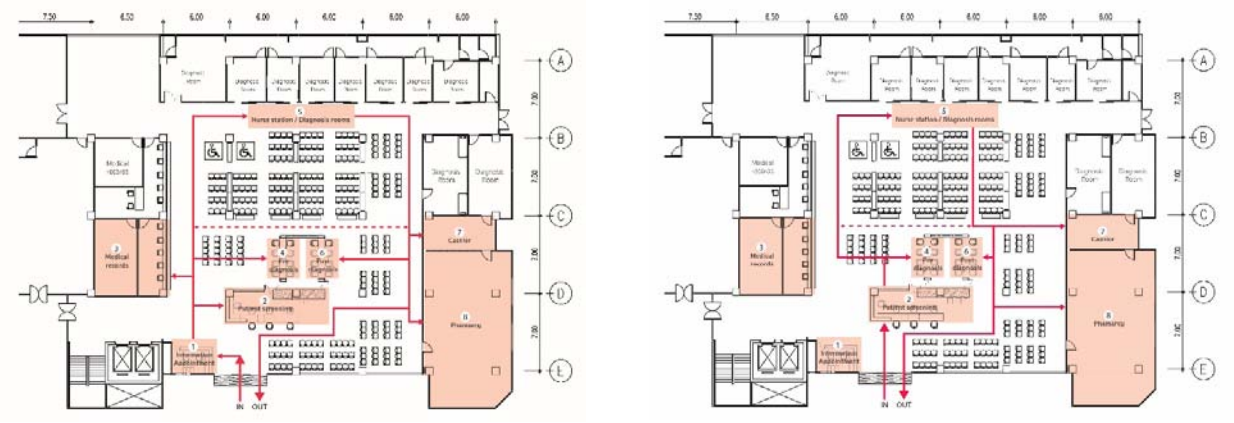
Figure 7. Perspective showing Laem Chabang's OPD after the renovation.

The design team, therefore, proposed to redesign the OPD layout in order to lessen the congestion and overcrowded problem in the waiting area and to increase a better connection between different services with more effective workflow. The design intervention aimed to offer OPD spaces that can support well-being of both service receivers and service providers by creating a more legible planning, a better way finding, and a more relaxing atmosphere. Based on the proposed scheme, the service station in the OPD were reorganized and the signage system was redesigned with the addition of bilingual information. Also, information boards and panels were installed in order to promote a better way finding system (see Figure 3). Regarding the layout, main circulation was clearly defined and space for wheelchairs and patients' beds was added. Furniture was properly allocated to face the related service counters. Moreover, for a better workflow, new centralized service station was designed to share space with similar functional requirements and also to share the healthcare staffs with relevant medical services, including (1) Information and Appointment, (2) Patient Screening and Medical Records, and (3) Pre and Post Diagnosis (see Figure 6 and 7). The central service station was placed in the area with the consideration of the flows from the central station to other service areas such as waiting area, nurse station, diagnosis room, cashier and pharmacy. Human scale was carefully applied in the new design. An installation of appropriate luminance at each workstation and the whole OPD area was applied; and the selections of material and color were also taken into consideration. Moreover, since an initial survey informed that patients spent a long ninety-minute waiting time in the OPD before receiving their medical diagnoses, creating a relaxing atmosphere for OPD is considered as necessary for patients' well-being. Therefore, 13 "Happy Carts" were created and used as partitions dividing areas into proper sections that provided privacy for patients and staff members. The carts could also be used as shelves for books, leaflets, and other publications, allowing patients and visitors to access health-related information and knowledge easier and could spend their waiting time with those documents. Moreover, small plant pots and other positive elements could also be displayed on the shelves in order to distract the patients from their unpleasant and stressful situations.

However, after the proposed design was tested in the real setting for 4 weeks, the circulation and workflow have been changed by the hospital personnel who are the users of the space (see Figure 8). One said that "*The centralized service station is good as it makes it easy to communicate between workstations and it reduces patients' waiting time, but the working space is too small. Sometimes the new service stations generate a conflict of workflow and do not fit with my daily routine."* The comment shows the conflict between the design based on theoretical implication and the familiar routine behaviors.

5. Negotiation in Design

The data of this study suggests that a public community hospital may encounter several problems related to the quality of space. As seen from the case



(Source: The Author)

Figure 8. (Left) Layout showing circulation and workflow proposed by the design team (Right) Circulation and workflow have been adapted by users according to their familiarity.

study, the hospital personnel provided a long list of undesirably physical conditions they would like to improve. The list included insufficient parking spaces, confusing circulations, inadequate waiting spaces, poor green areas, overcrowded spaces and perplexing signage systems, to name a few. The raised problems related to planning and design interventions in different scales from the master plan and building design to the interior design.

Besides providing problems, the participants also showed their aspirations for the improvement of the workplace, as seen that they proposed different ideas for their "Dream Hospital" through the participatory process. That is, such a process allows space users to think about the condition of their environment and to express their perceptions as well as their preferences. A few participants pointed out that, by involving in activities, they had chances to learn more about their hospital and to consider the condition of the hospital environment in detail. For example, a female participant in "Snap & Share" activity said "*This is the first time I carefully notice that corner [of a corridor] – I know it's there but …*"

Moreover, It should be noted that participatory design is a process in which the hopes and desires of all parties can be kept and negotiated in a constructed space that Schneekloth and Shibley (2000) called 'a dialogic space', whereby the knowledge of the professionals and the users are shared, disputed, negotiated and considered. In practice, by enabling the end-users to share the power of making decision, Till (2005, 2006) argues that the professionals still need to maintain their ability to envision. Therefore, negotiations between the designers and the users have become inevitable in the participatory design process. In the case of Laem Chabang Hospital, the designers assisted the healthcare professionals to visualize how well-being environment their OPD could be transformed, and to envision how efficiently it benefits their routine work and the service delivered to patients. During the process, healthcare providers learned more about scope and benefit of professional service by architects and how it could improve their healthcare environment. On the other hand, the tacit knowledge from users, who are actually experts in their field of practice, and their responses to initial designs also suggest the designers that the design process should rather be open, flexible and adaptable to changes. Standard design methods from textbook may not be fully applicable with actual delicate situations, or they must be compromised or negotiated if required. As seen in this case study, when the healthcare professionals tested the initial design of new OPD's planning out for weeks, certain issues (e.g. the interrupted workflow and inadequate space) emerged, and were raised by the users for discussion with designers. As presented earlier, the final design of the workflow had to be

adjusted to fit the personnel's preference although it did not match the standard design guideline. The design was, therefore, negotiated and adapted to be responsive to their actual use of space as much as possible (see Figure 9 and 10). In short, learning from the participatory design process with other professionals, the designers experienced that in reality, the ideal design based on guidelines may not match with actual users' behaviors and preferences.

(Source: The Author)

Figure 9. Images showing Laem Chabang's OPD conditions before and after the renovation.

(Source: The Author)

Figure 10. The less crowded waiting area at Laem Chabang's OPD after the renovation.

The case study also shows that, in the design process, one cannot overlook the negotiation between groups of users, particularly in Thailand's public hospital setting where the organizational hierarchy is rather strong. Essential literature has greatly emphasized that a genuine participation occurs when all parties have equal power to determine the outcome of decisions. Sharing of ideas, planning and deciding together are the most crucial element of full participation (see Arnstein 1969, Pateman 1970). However, as seen from the case study, participants who were at a lower ranking of the organizational hierarchy tended to remain quiet when their opinions differed from those of higher ranking persons. In this way, certain information may be voided. That is, when people with different levels of social power take part in the participatory design process, the process may be manipulated. Therefore, it is crucial to practice the art of negotiation carefully. Designers need to be aware of the possibly distorted information gained from the users. Nevertheless, the data of this study is not enough to elucidate the issue; further study is still required.

In addition to the process of negotiation between space users and designers, the case study also demonstrates how a public hospital exercises its organizational power. As mentioned earlier, the designs of public hospitals in Thailand are normally supervised and controlled from the central office of MOPH, the same standard practice that Laem Chabang Hospital has to follow. The hospital had already reported the need for the environment improvement; and the design personnel from Design and Construction Division of MOPH had visited the hospital. Nevertheless, due to the complicated system and the limitation of budget, the project has not been progressed. Therefore, the hospital accepted to work with this research-based designer team. This cooperation was possible since this reported project was conducted as an academic project. Furthermore, in the part of the construction expense, the hospital decided to use non-budgetary fund which was not allocated from the government. Working on this way, the hospital gained more flexibility to manage its own resources and spaces. However, relevant regulations of the MOPH were still seriously taken into account. The design and construction work was still needed an approval from the head office of the Ministry. This led to the negotiation between the hospital personnel and the designer team to find a practical framework which enabled both parties to work together with agreeable pressure from rules and requirements, including managerial constraints, timeframe and budget. As presented above, the final decision limited

the scope of main work just for the improvement of the interior spaces of the OPD. At this scale, certain decisions could be made directly by the hospital directors; in other words, the design and construction work could be processed with less involvements from the main office. It should be useful to note here that besides working on the OPD, the hospital personnel also asked the design team to work on additional small tasks (e.g. designing an awning) to solve their everyday problems. This phenomenon underlines the idea that public hospitals need a support from design professionals; and the current centralized system cannot serve them effectively.

The negotiation was not limited to only during the design process but also during the construction period. It was difficult to find a construction contractor to work on this project due to multiple reasons. First, it was a small renovating job conducted in a hospital space which was actively in use. Thus, the project scale and operating inconvenience could not attract contractors outside the area. Only few local contractors could be recruited. Second, with the limited choices of local contractors, it was not easy to find and commission a capable contractor who really knew how to work on this sensitive task. Finally, the construction work was not initially built up to the standard and satisfaction stated in the design specification. The representatives of the hospital and the designer team as well as the contractor had to set up a meeting to negotiate for the acceptable solution. The contractor agreed to rectify the mistakes, but within the acceptably extended deadline.

In summary, participatory design process allows space users and designers to work together. Users can be encouraged to considerably explore their environments and to reflect their experiences, perceptions, expectation, etc. While the design process is carried on, the art of negotiation is practiced by stakeholders and a wide range of negotiations are possibly involved in the design and construction process.

6. Limitation

Although this participatory work was carefully designed prior to its implementation, certain limitations of the study emerged during the practice and should be addressed here. Firstly, it is necessary to note that a variety of professionals and staffs from different hospital departments were expected to collaborate with the designer team in this project. A name list of participating staff was requested and given to ensure participation consistency. However, in the real situations, participating staffs in each workshop were not quite consistent. The team had more experiences with key persons. A lack of opportunities to communicate directly with a wide range of operating personnel occurred due to schedule conflict and the nature of the managerial system of the hospital. Secondly, according to the constraints of budget, time and inconvenience of the hospital, there is a lack of opportunity to try out the full scheme of the initial design intervention on the real setting. Lastly, there is uncertain stage of hierarchical authority in decision making in the studied hospital, which sometimes obstructed the flow of the process.

7. Conclusion

This study explored the reflections of hospital personnel who involved in the process of participatory design conducted in a public community hospital in Thailand, the ninety-bed Laem Chabang Hospital. It shows that the process enables the personnel to scrutinize the conditions of their workplace. Not only did the participatory design method result in a sympathetic design for the healthcare facility, an OPD renovation in this case, it also provokes a better understanding between medical and architectural professions, as well as an awareness of the roles and significance of healthcare environment design towards the medical services and healing results. The action process generates knowledge, which rechecks the

efficiency of contemporary applications from textbook into practice. It also proposes a new design method for a public hospital one way or another. To improve facilities and built environment of public hospitals in Thailand, the participatory design method is recommended as a significant part of the design process. However, detailed steps of the method implementation itself must be negotiated and carefully adapted to fit limitations in the particular case as well.

The study also demonstrates that negotiations are a crucial part of the participatory design process, particularly when the process involves limitations caused by the organizational system. A variety of direct and indirect negotiations happened during the entire design and construction process. The process led to negotiations between different sets of contributors including hospital executives vs. staffs, staffs from different service divisions, doctors vs. nurses, medical staffs vs. physical facility staffs, staffs vs. patients, hospital executives/staffs vs. designers. A wide array of issues brought to the working table include financial limitation, conflict between healthcare facility design theories and actual medical service practices in public hospitals, conflicted behaviors in medical service provision, familiar patterns in spatial usage, to hierarchical authority in decision making, specific hospital constraints and requirements, and short-term and long-term considerations, as well as different personal preferences and perspectives.

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