Participatory Design: How May Designers Create Furniture that Allows Meaningful Place-Making

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Abstract

This paper has developed design method for furniture designer's that allow users to express their needs through place making or creation of meaningful office workspaces. We discovered that there were problems in getting the users to explain their ideas through verbal explanations. From there we started to use a participatory design approach with mock-ups to investigate the main methods and to explore design opportunities in developing new office environments. The study revealed, by using role-play with mock-ups directly with the users, allowed the designers to quickly become aware of arising issues without the need to do a potentially time-consuming, normative and tedious observational study. This research approach is primarily leads to new understanding about practice and described as "practice-led" approach to research. This project had investigated, demonstrated and opened the possibility that these approaches could be turned into a practical participatory process toward design in furniture industry practice in Malaysia.

Keywords*:* Participatory design, place making, role-play with mock-ups, practice-led, meaningful workplace

Introduction

Our method sought to build the techniques which previously used by Mitchell (1995) and Lemons et al. (2010). Firstly, we identified the importance of understanding the needs and aspirations of users with regards to office furniture. Then, using participatory design role-play with mock-ups, it had enabled all respondents and participants to reveal their current problems, needs and aspirations. They started to create useful design ideas and opportunities for designers in developing new workplace designs. From here on out, it became evident that this technique was useful, workable and quickly accessible for Malaysian designers in actual design practice or other similar developing countries. In relation to this, we developed a social interaction technique to inspire and enhance active participation. The mock-ups helped the respondents to overcome their ignorance in design. It had also helped the participants and respondents to overcome their low awareness of 'design language' and started to share their concerns. Through exploring how mock-ups could be used as productive tools to explore users' needs and aspirations, the outcome derived from this research, was aimed to develop and provide guidance in design research techniques.

The study revealed, by using role-play with mock-ups directly with the users, allowed the designers to quickly become aware of arising issues without the need to do a potentially time-consuming, normative and tedious observational study. Our approach had the characteristic of intervention which allowed participants to go beyond normal practices, environments and scenarios.

2.0. Contextual Review

2.1. Participatory Design (PD)

Participatory design is a design approach that involved the designer and stakeholder (e.g user, employees, customer, etc.) in the design process in order to produce a usable design that meets the user needs and requirements. The approach has been used in several fields of research such as planning, architecture, software design, urban and landscape, graphic even medical products. It focuses on the design processes and methods of design to produce a better and quality artefact.

'One of the key intentions of participatory research is to find ways for people to get involved in research and design activities that may impact on them. This allows them to define goals, contribute on their own terms in an emancipated manner, and take ownership of decision making processes'. (Foth and Axup, 2006:93)

Further, Forth and Axup in their research regarding participatory design found that, the practical advantages of following a participatory approach, have led to a whole range of new research methods, which were becoming increasingly accepted outside their organisational, cultural and disciplinary boundaries. Establishing the connection between researchers and respondents was one of the most challenging tasks that required a creative approach and an individual strategy for some research settings.

Gregory (2003:63) found that, user participation in design is desirable for several reasons with mixed motivation:
- Improving the knowledge upon which system are limited;
- Enabling people to develop realistic expatiation, and reducing resistance to change; and
- Increasing workplace democracy by giving the members of an organisation the right to participate in decision are likely to affect their work.

A product may be suitable to a current, but not to a new user who has been experiencing difference situations. A new data collection had to be carried out to explore and understand the needs and requirements that are more closely synchronised with existing practices.

Participatory Design is also known as Collective Resource Approach, Cooperative Design, Cooperative Experimental system Development, Work-oriented Design, Situated Activity, Contextual inquiry and Situated Design. The PD method that has been implemented by researchers including interview and observation, design-by-doing, mock-up envision, workshop, organisation games, co-operative prototyping, ethnographic field research, etc. (Ehn and Kyng, 1991), (Mitchell, 1995), (Crabtree, 1998), (Gregory, 2003) and (Holmlid, 2009).

Bowen 2009 in his research in a Critical Artefact Methodology revealed that PD aims to produce 'happier' (empowered, enabled, fulfilled) stakeholders and better products/ productivity.

'Participatory design gives value to both human and operational improvement. Participatory design instead seeks to design technical systems that provide stakeholders with better tools for doing their work – to utilise and enhance rather than replace their skills. Participatory design can also operate on several scales, affecting individual projects, companies or even national policies'. (Bowen, 2009:53)

PD methods are a technique that helps a designer to connect with the potential users and to understand their needs, especially during the creative phase of the design process.

2.2. Practice-Led

Design practice has begun to explore new dimensions. Designers role has become as important researcher to triangulate within the user needs and interpreting the creative process in design practice. The designer/researcher must equip themselves with the knowledge and the skills of a practicing designer form as part of the research process, and this has produced a new way of doing research.

"Designers have to practice design in order to conduct research". This research then could be said to be practice-led research, which has also been termed 'research *through* design' "Practice-led" research is concerned with the nature of practice and leads to new knowledge that has operational significance of that practice. It is a creativity segment that is relating a concept to a particular body of knowledge towards innovation.

There are three possible relationships between research and practice:
- Research *about* practice – inquiry focussed on practice; (e.g., pursue a design project to help uncover making processes
- Research *for the purposes of* practice – inquiry to inform or provide material for practice; (e.g., pursue a design project to help conceive and develop new design procedures, information, priorities, and tools).

- Research *through* practice – inquiry achieved via practice. (E.g., pursue a design project to help contribute to how a type of product can be designed, how it can be improved, and to demonstrate benefits)

3.0 Methods

Our main method was divided into two main research approach as explain in 3.1 and 3.2. Our approach is fully integrated design project within academic research. In each of these approaches, the inclusion of a design project constitutes an empirical enquiry from which designing (as activity) and designs (as outcomes) are sources of research data.The results of practice-led research may be fully described in text form such as guideline/guidance without the inclusion of a creative work or artefact. The focus of practice-led research is to explore new knowledge about practice, or to advance knowledge within practice.

3.1. Role Play with Mock-Ups

Mock-ups (three dimensional scale mock-ups) were used as an alternative tool for communication between users and designers, due to the differences in level of knowledge and design experiences. Other similar research suggested the use of scale mock-ups as in the approach used by Mitchell (1995). They used mock-ups to explore users' needs and an effective design language that made sense to the respondents. The participatory design method allowed the users to be involved in the process of design development at early stage.

An indirect result from the role-play approach was the design work that had contributed to the design development in this research. Study from Ehn and Kyng, (1991), Mitchell (1995) and Lemons et. al. (2010) can be concluded that 3D models (Figure 1) during role play design task, help us to generate and evaluate ideas and they give better visualisation of users' ideas. Thus, the conceptual design work had also challenged the users to generate their own ideas and needs in order for them to reveal their own design concept.

Figure 1: 3Dimensional Scale Mock-ups
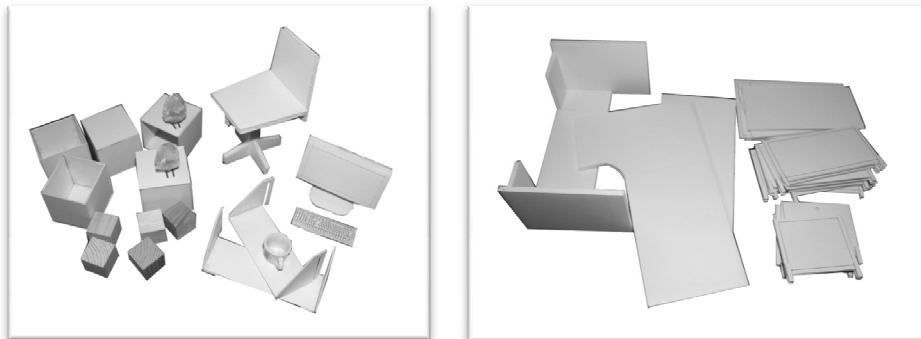
3.2. Direct Observation

Direct observation was one of the social inquiry techniques used in this research especially during the role-play with mock-ups sessions with office workers. In conducting the role play with mock-ups, direct observation was initiated to identify any information that was not mentioned in role-play activities. Observation was an essential element to understand an ongoing behaviour, process and outcome of unfolding situation. Taylor-Powell and Steel (1996) stated that "Seeing" and "listening" are the keys to observation. They clarified that observation provides the opportunities to document activities, behaviour and physical aspects without having to depend upon peoples' willingness and ability to respond to questions.

According Yazid (2010), direct observation is very useful when details of an activity need to be accessed and when interview techniques are unlikely to draw out the required information due to the respondents either not knowing or being unwilling to say during the interview sessions. In this study, direct observation was conducted during role play with mock-ups demonstration to office workers. Since most of the respondents were from non-design background, it was more appropriate to ask them to perform their daily activities at their workplace by using mock-ups rather than explaining them verbally. A direct observation approach allowed me to view the users' daily activities, their needs and the users' aspirations in new workplace design process. Observations activities were systematically recorded through audio and visual format using a digital Hard Disk Drive (HDD) video camera and Digital Single Lenses Reflex Camera (DSLR). Observations pertain to what we see as well as what

we hear. Recoding can be done through various techniques such as audio and visual. The audio and visual is an extension to the eyes and ears that provide evidence that can be used for analysis later.

Demonstrative photographs of the participants in the existing workplace were captured twice (taken during the middle of a session) as well as photos of new ideas of desired future workplace (at the end of the session). Photos were taken to support the interviews and as visual evidence.

4.0. Data Collection

4.1. Personalization

Personalizing workplace with personal items and belongings (Figure 2) served to express people's personality, emotions and status within the company, thus helped the employees cope with stress.

**Figure 2: User's Workplace (NE05)**
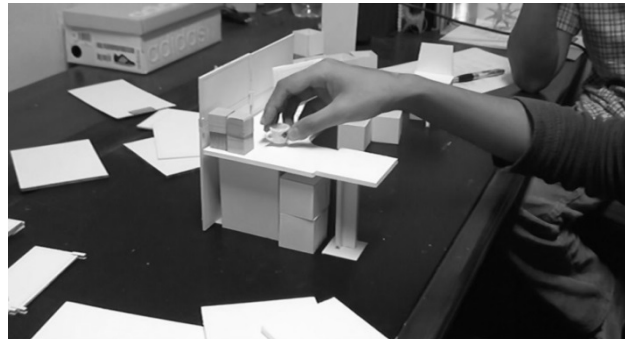
"...workers in open spaces tend to personalize their workplace with their own belongings compared to workers that work in closed office. This is the ways to mark their territory. Person in closed office has their own office spaces so they have low needs of personalization..." (EX01:25, non-expert interview)

All respondents mentioned that they personalized their workplace with their personal belonging such as mugs, pictures, pillows, etc that reflected themselves or their organization.

"...I decorate my workplace with flower, butterflies (toys) and mug. I place the accessories such mug and keychain in one corner. I will look at it when I feel bored ..." (NE05:15, non-expert) (Figure 3)
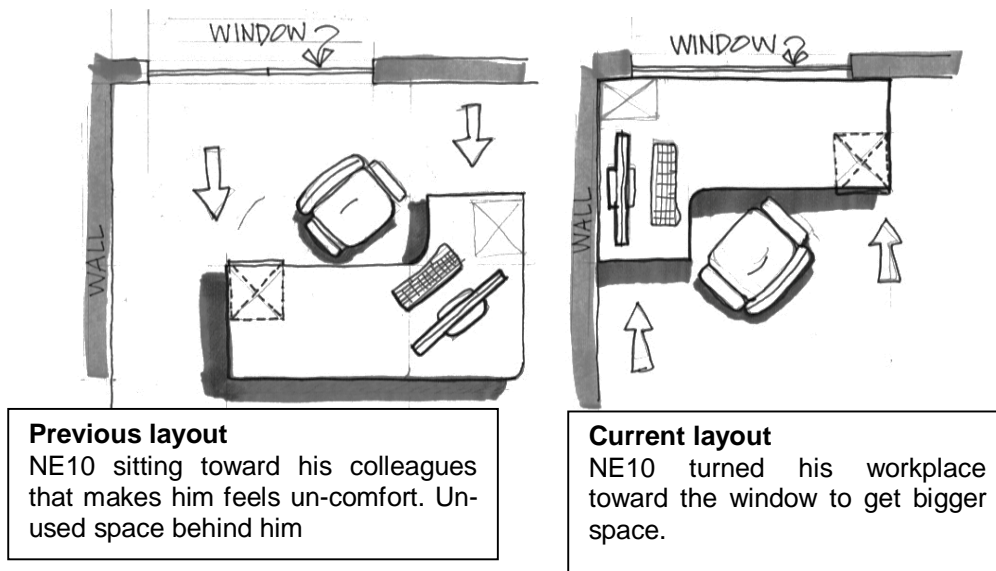
Figure 3: Personal Belonging from Home
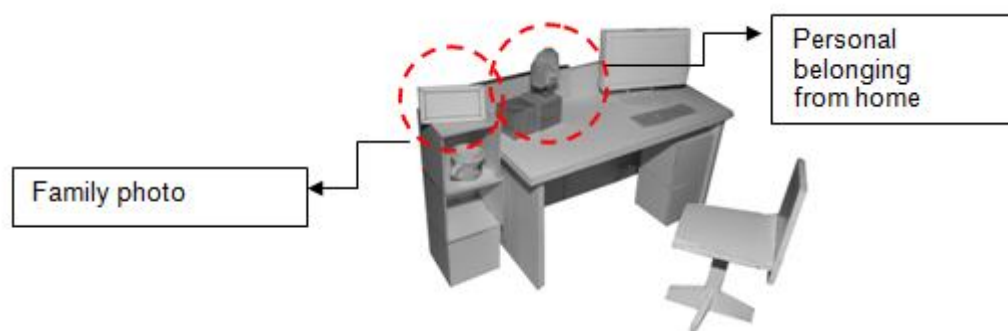
4.2. Place-making

Some of the respondents re-arrange their office layout according to their practical needs. They used they own assumptions to rearrange their office layout and they believed it would improve their working environment. NE10 and NE11 changed their workplace in total for better office layout.

"... I have changed the office layout. I don't like it. I move my table 180degree and facing toward the window. I think after changing the layout we get bigger space..." (NE10:36, non-expert) (Figure 4)

Figure 4: Early sketches by NE10 - Place-making

Previous layout
NE10 sitting toward his colleagues that makes him feels un-comfort. Un-used space behind him

Current layout
NE10 turned his workplace toward the window to get bigger space.

"... Yes. We have changed the layout two times. The numbers of staff in our office increased every year. We changed the layout every time when we have new staff. The management has to change the layout to accommodate more people in a small space..." (NE11:44, non-expert interview)(Figure 5)

Figure 5: Early sketches by NE11 - Place-making
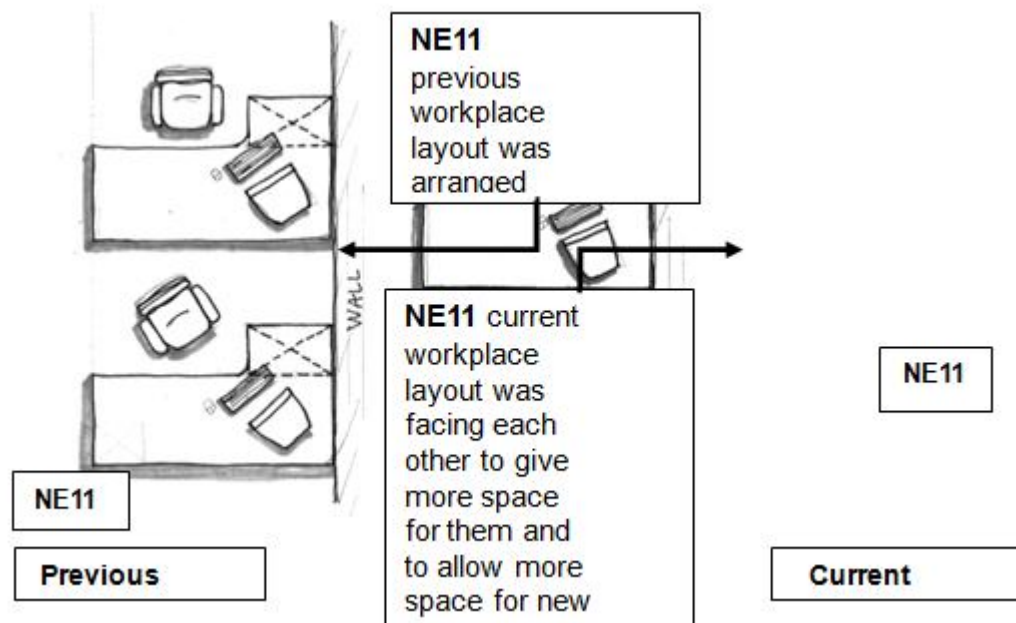
In the role-play with mock-ups, all of the respondents were allowed and had the freedom to change their workplace according to their personal ideas. All the respondents made a total changed in their workplace layout according to their needs and aspirations.

"... I prefer to have L-shape table and the side table depend on where I'm sitting. My table should be facing toward the door. So I can see staffs walking in and they cannot see what I'm doing. I want higher partition for privacy..." (NE06:30, non-expert) (Figure 6)

Figure 6: Personal Belonging from Home
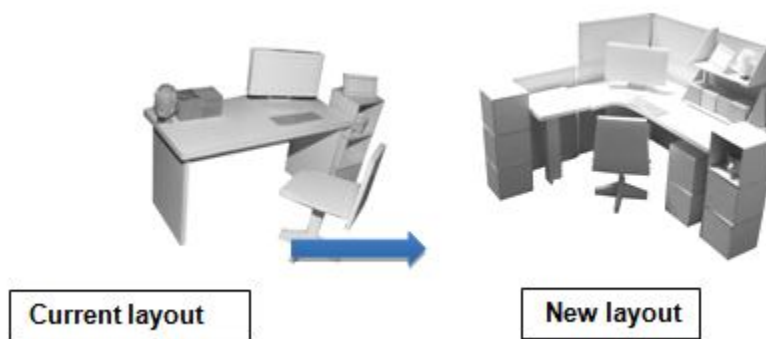
4.3. Meaningful workplace

Through role-play with mock-ups, it could be seen that all respondents personalized their workplace whether with their own belongings or office ornaments as indicators to mark their place/territory and to show their ownership to their workplace (Figure 7).

Figure 7: Marking their Territory (NE07 (left) and NE04 (right))

"... I to place some family photo on my desk for as working motivation and some toys to make it more cheerful and ownership the workplace. By seeing the butterflies, all staff in this department knows this is my workplace. This is my identity..." (NE07:32, non-expert)

"...I admit that this workplace belongs to the government, but as workers that sit in it, we must take a good care and show our sense of belonging to our workplace..." (NE0:28, non-expert)

"...Our workplace is the only personal place we owned in the office. Where we sit, work and developed ourselves. The workplace can be as our territory and the place that we can show our sense of belonging to our office and job..." (NE05:20, non-expert)

The participants were very aware of their displays expressed about themselves and what others thought of them, and this was equally important factor in what they chose to display and not display.

4.4. Privacy

Most of the respondents interviewed, said that there were too much interferences from people around them. From people talking in the office, into the phone and people walking, as a result, they found it difficult to concentrate on their daily work. Visual privacy was one of the main issues, with some of the respondents complaining that they had difficult to concentrate with their job when they could see others walking around them. Some of the respondents hoped to get higher partitions around them in order to gain more visual privacy.

"... I need partition because I need privacy and I need my own territory to do my work (Figure 8). *It is difficult for me to concentrate to do my work when people walking in front of me...."* (NE03:33, non-expert)

Figure 8: NE07 Aspiration
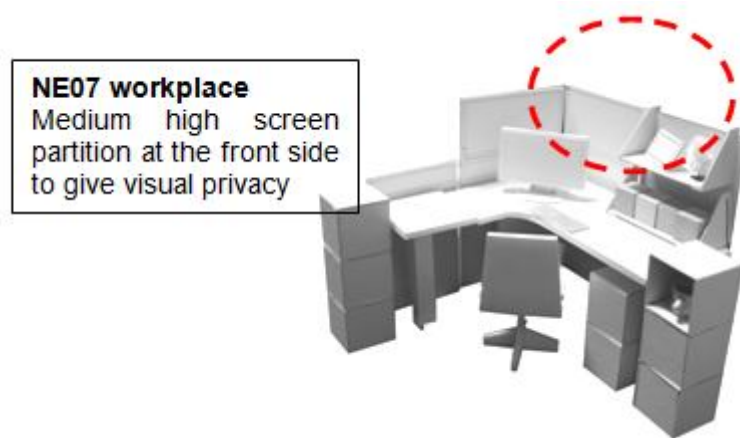
"... Privacy is my main priority. Without privacy I cannot do my work. I would like to get high screen partition to prevent eyes contact with my friend especially when I'm doing my work (Figure 9)*..."* (NE04:25, non-expert)

**Figure 9: NE04- Aspiration for Privacy**
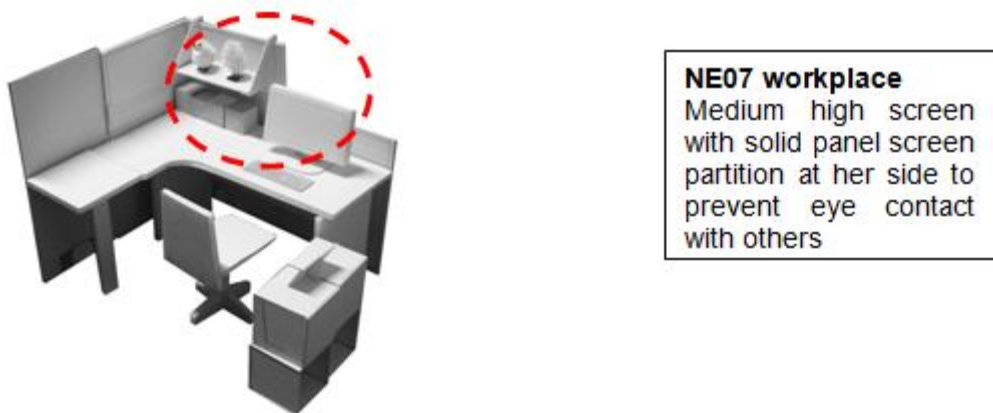
5.0 Place-Making Development

The next stage in the design process is to build workplace design. Design workshops consist of office worker and furniture designer were performed. During the role-play with mock-ups, the participants in all workshops seemed to use the mock-ups as a tool for analysis and negotiation between groups. Once the mock-ups were in use, it was observed that the participants who had been reticent became more active in contributing ideas to the discussion.

Figure 10: Sketches by Design Workshop participants
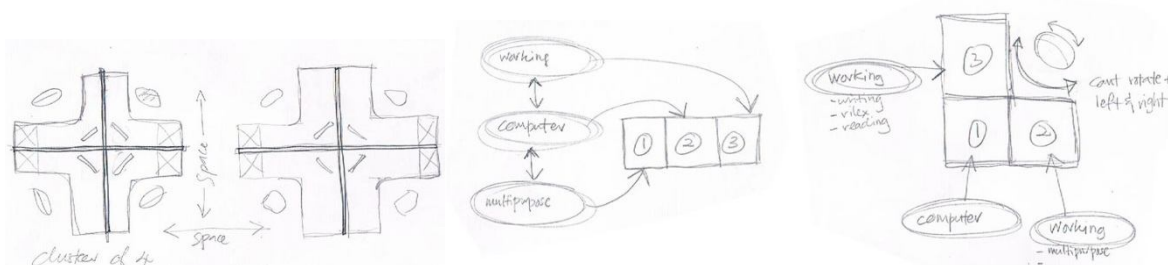
A few ideas that were not thought out during the initial discussion were revealed once they started the role-play with mock-ups. Using 3D mock-ups, it had helped them to predict the real office situation. It was also seen, compared to the initial observation, a greater number of ideas emerged after the mock-ups were introduced and participants appeared to arrive at an agreement more easily.

Figure 11: Design Workshops
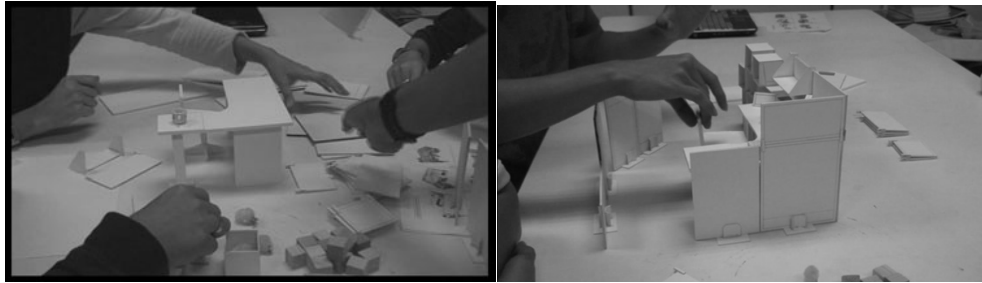
6. Discussion

The research had enabled us to propose a systematic guidance for designers and design researchers using an appropriate technique in design research. Our expectation was that this investigation would help designers, researchers and educators to identify appropriate approach on how to engage users in their practical work through the context similar to the one we had investigated. The combination of contextual inquiry, research methodology and implementation of participatory design role-play with mock-ups formed a triangulation towards the objectives of the investigation.

Rahman (2010) found that, ample space should be given to designer/researcher to be creative in manipulating a situation in which the outcome of the research may end up closer to the objective of the study. This research had also demonstrated and proposed a process of how designers could involve users in understanding design problem and creating new ideas. This research process was developed and refined through the research project and finally formed a methodology for design practices that could be implemented and relevant to any designers/researchers/educators with similar research interests. In this research we used office furniture as our case study but, this methodology could also be adapted for different contexts and different design cases. The research conducted was to help designers in how to engage users in their projects/design process in developing new design for future uses.

Our research methodology took a step back, In relation to Mitchell and Lemons. We did the refinement within the circle process (Figure 12). The process involved an expert, non-expert and design workshops activities to produce larger data and more design opportunities.

**Figure 12: Our Research Method as Participatory Design Approach,
Role-Play With Mock-Ups**
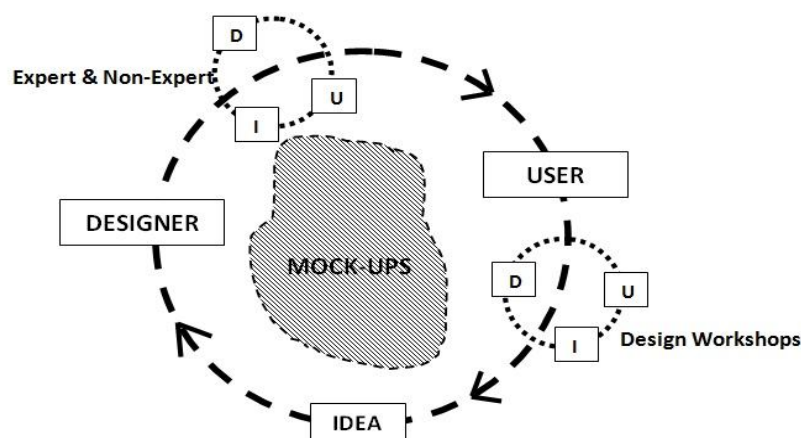
This research was aimed to produce guidance for designers are keen of role-play with mock-ups approach and also to be adapted by other researchers that wanted to implement this approach in their research project. This research methodology provided the outlines on how designer could understand the needs and aspirations of the users and engage them in design process to reveal design opportunities. Finally, we will summarise our role-play with mock-ups methodology and suggest how this approach is able to be implemented in other/wider design field.

**Figure 13: Role-Play with Mock-Ups Approach to Inform Ideas**
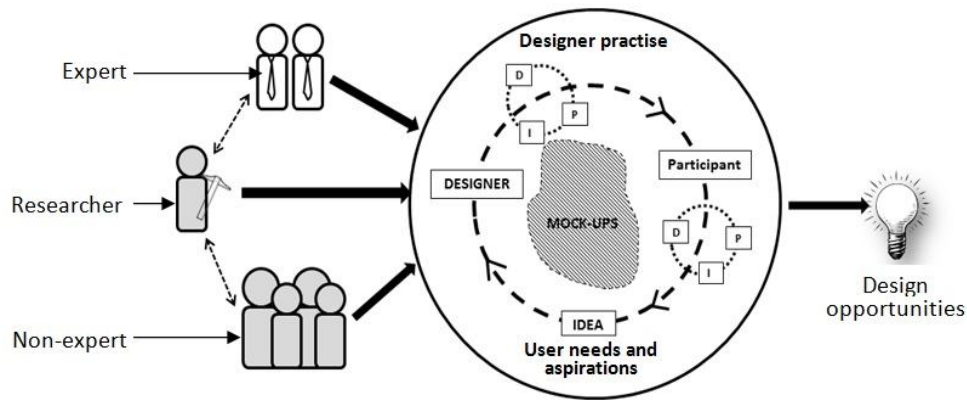
The design approach in figure 13 illustrated a triangulated understanding of researcher (creating a method for our research), non-expert (needs and aspirations); expert (design and requirement in real practise and how they could be engaged in creating new design ideas.

The outer circle is the participatory design approach activity in the design process and the inner circle is the role-play with mock-up activity that employed in this research context to inform ideas. These findings created a tool to connect the participants, engage and employ them in the design process.

Figure 14 develops the concept in figure 13 and illustrated how the method could be implemented to meet designer/researcher needs. It consisted of four design stages.

Figure 14: Method to Foster Ideas
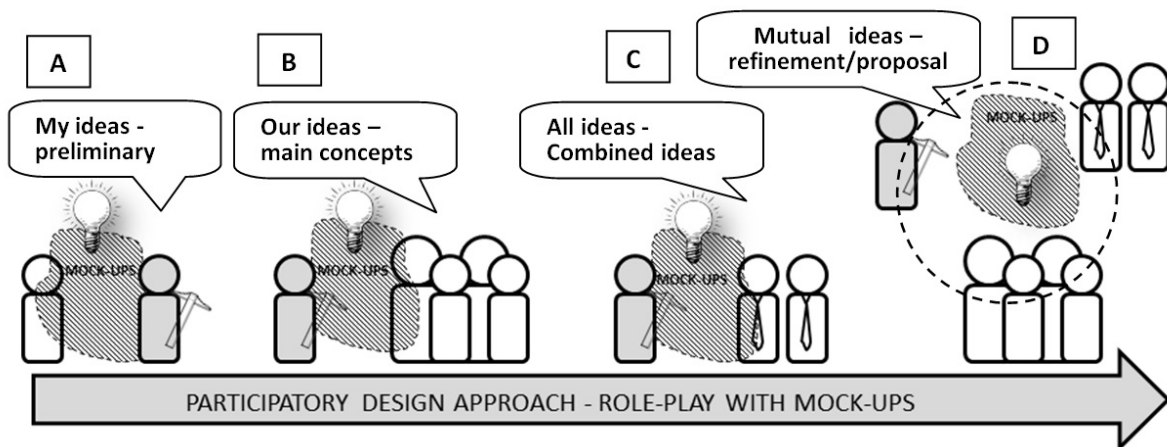
A. **My Ideas** - Early understanding and user-engagement between users and researcher to analyse users' current experience in their everyday practice. The role-play with mock-ups process was to create themes/keywords in the contextual inquiry of the research. The role-play with mock-ups created the outset ideas in the design process. Users could directly involve in demonstrating ideas of their workplace.

B. **Our Ideas** - Evaluation and development activity by focus groups to foster mutual agreement in creating design ideas. Role-play with mock-ups had created active discussion and revealed new ideas beyond participants thought in the earlier stage. Participants could discuss, modify ideas and predict the situation in almost real situation during the design process.

C. **All ideas** - Reflection from experts regarding ideas from users. Experts evaluated users' design ideas and analyse whether the process revealed useful design opportunity. Along the design process, the design ideas were developed with a number of limitations which must be noted. Using role-play with mock-ups, expert's merged/combined users design proposals with their professional practice to produce possible design solution.

D. **Mutual ideas** - Non-expert and expert (assisted by researcher) performed in the role-play with mock-ups in design workshops to seek for mutual agreement. This was the process of design refinement and to create useful new design ideas. Effective design involvement by participants during open discussion led not only to better ideas/design proposals, but it was a *win-win* situation to satisfy all groups.

7. Conclusion

In this research we have conducted the role-play with mock-ups to create and investigate the past, present and future needs. The mock-ups were useful tools and designer, researcher and educator could easily gain users' insight without having to go through a complex observational study. To date, user-engagement in developing furniture design was neglected in Malaysia. This study showed that this research approach was workable in Malaysian design practise. The process was not just focused on designing a product, but it was also a process of understanding the users' needs and aspirations that contributed to the progress of the research. Moreover, it enhanced the connection between designers and users. The research experiences and process gained in this research had enabled us to understand the technique of user-engagement in design processes. The combination of creative knowledge design understanding in user-engagement activities and implementation of methodology had enabled us to produce a relevant technique in design research. This research could be developed continuously by other designers or researchers, and disseminated through publication and teaching by Malaysian future designers.

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