

Formgiving: Factoring Elderly Sitting Furniture Design through Designers Activity

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Abstract

This work-in-progress paper in the research category presents a single case study taken through triangulated sample group which conducted in an advance to postgraduate coursework design data collection as in part of design innovation; which in this case overlooking chair design for the elderly. The study investigates the activity pattern of coursework master students, academicians and industrial designers' level and patterns in reasoning that applies to the physic-chemical form and geometrical form that spanning further through functions, needs and values in product design embodiment. We examine whether triangulated group sampling contributes to the dominant feature of product development throughout Designers Design Sketch Information (DSDI) analysis that involves concurrent and retrospective think loud feedback. Through research being conducted within models and methods structured; contribute to multi-level direction that provides limitation understanding, design direction and experience drawback in product development.

Keywords - Furniture Design, Verbal Protocol Analysis, Design Reasoning, Designers Design Sketch Information

1. Introduction

When it comes to Design Activity as procedural steps in factoring design product through a designerly way of knowing, there will be a wide arrange of aspects that need to be further considered. Design Activity and what it envelops is often being debated. Regardless of certain explicit components are associated which on this case study (Anwar, 2016), there is a structure challenge that needs to be answered. There is constantly a point of the basic decision-making process on how a triangulated group grow and evolved within a similar pattern of design factors and attributes challenge that needs a solution. There is always a pattern in decision making within the critical designing process where a researcher must consider using data or educated estimations when designing tangible products in which in this case of study, elderly sitting furniture design. These educated guesses of factoring what is right or wrong with the mediating subject design contribute to the early designing intuition factors in designing (Anwar et al., 2015).

According to Portal Rasmi Jabatan Kebajikan Masyarakat, the number of senior citizens in Malaysia increases from 7% to 14% within 28 years. The increasing number of a senior citizen in the Malaysia population put 'design for elderly' demand for further improvement on the product which to ease their daily activities.

Table 1 Title of Example Table

| | 0-14 years | | 15-59 years | | 60 & above years | | Total |
|-------|------------|------|-------------|------|------------------|-----|------------|
| Year | No. ('000) | % | No. ('000) | % | No. ('000) | % | No. ('000) |
| 1957+ | 2752.1 | 43.8 | 3236.8 | 51.6 | 288.0 | 4.6 | 6276.9 |
| 1970 | 4684.5 | 44.9 | 5208.9 | 49.9 | 546.0 | 5.2 | 10439.4 |
| 1980 | 5413.0 | 39.3 | 7563.0 | 55.0 | 787.0 | 5.7 | 13763.0 |
| 1990* | 6818.0 | 37.1 | 10512.0 | 57.2 | 1047.0 | 5.7 | 18377.0 |
| 2000 | 7717.0 | 33.9 | 13618.5 | 59.8 | 1425.4 | 6.3 | 22760.9 |
| 2010 | 8736.1 | 31.4 | 16980.3 | 61.1 | 2094.0 | 7.5 | 27810.4 |
| 2020 | 10191.8 | 30.5 | 19921.2 | 59.7 | 3261.0 | 9.8 | 33374.0 |

+ Peninsular Malaysia only
* Denotes 1991
Source: Department of Statistics, Malaysia

2. Research Motivation

In the process of designing chairs and furniture, sitting arrangements were the earliest creation of man. Simek in 2013 analysed "Sitting Furniture for Elderly People" where he states the options for sitting furniture were suitable for senior citizens (Siran et al., 2020). A good sitting can make an immense to someone who is weak or has a problem moving on their own. According to Astonkar and Kherd (2015), sitting is an activity and it is something people do daily and it relates with their environment.

The aim of the research is mainly to design sitting furniture that suits the target market which is a senior citizen by applying the potential design on that sitting furniture through designer design feedback. The potential design was collected through triangulated samples group in which group were divided to three (3); in which group A was presented by industrial designers; group B were masters students with an industrial design background (furniture based) and group C were academicians, which are lecturers with an industrial design background (furniture based). Throughout the triangulated group, feedback of early interventions to design factors can be modelled from direct evidence of concurrent and retrospective experience feedbacks that excavated through ideation comments and drawings can be collected.

Vermol, (2017) studied overlapping sketch activity that sooner explained as Designer Sketch Design Information (DSDI) indicates the possibility of controlling designer design activity, thus provides a shorter time for the designer to sketch back for the design. Through connections of evolving design brief planned out from the earlier study with the user, the researcher can identify the influence that captivates designers in promoting them to have a directive understanding of what is working and not working with design communication within them. Whilst, Simek in 2013 suggested two samples as an ideal design for the elderly sitting position, this study will then be compromising the idea and sets as master design.

3. Rationalization Mediating Object Selection

Sitting furniture pot can be described as a product, which represents a conventional product used for daily purposes that fall under the category of "mainstream products". Mainstream products can be identified as mainstream products: products designed for the 'general population' and which can be obtained from standard retail and other outlets. Unfortunately, they are frequently designed without consideration of the needs of the disabled and many other groups of people (Hersh, 2010).

It is important for the reader to understand, as a whole, the aim of having a mediating object on this research is not for the sake of stimulating designers' consensus through the emerging problems of that particular product, nor to give design ideation to develop a physical prototype. However, emerging problems elicited by the blind user will be taken as factors in design rationality and technical aspect of ergonomics through blind user experience through using it. Thus, these factors are important in promoting the structuring of the design brief to drive further understanding in design activities. As for the designer, the aspect of having mediating object as mediator provides them with a similar understanding and consistent directing influences. Therefore, allows them to inspect the real phenomena looking from the same influential mediator to reflect on. In this section of rationalization, the researcher looks into (Mono and Liber, 1997) model of 'trinity-order' as driving components that trigger the influence of knowing:

- i. What product is being selected?
Product serves direct relationship interaction to the user by looking through the communicative as a whole.
- ii. Why is it being selected?
Close to the nature of being use; accessing through the knowledge of ergonomic calling the experience.
- iii. How can it be contributing to the experiment?
Re-direct force segmentation looking through technical as a whole.

Anwar et al. (2016) who experienced the In-Vitro Design Protocol (IVDP) as illustrated in Fig. 1 the ambiguous characteristics of metaphorical form through designers sketching processes of Islamic product design has led to a natural variety in output. Whereas Abidin (2008) refer to this phenomenon as "consistency." Thus, how do designers assess metaphorical form through their sketching assignments has been discovered (Abidin, Bjelland, & Øritsland, 2008). Throughout thirty minutes of design activity (short-term memory), this empirical study stipulates in-depth qualitative data reflected all artificial situations that have been arranged.

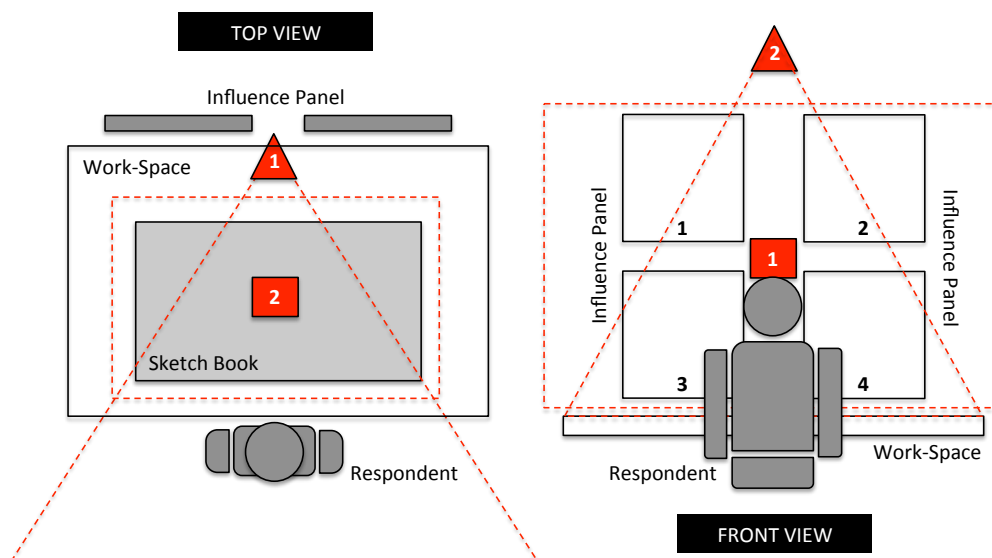


Figure 1. IVDP experiment setup (Anwar et al., 2016).

4. Methodology

Throughout the study being conducted, methods that were drawn from each participant evokes the involvement of the mental model in decision making within the attributes given. Designer Sketch Design Information (DSDI) act as a tool that represents respondents design feedback: inner voice and suggestions catapulted within the dimension of the existing feature of technical drawing as a master. Therefore, further comparisons of design contrast can be pre-determined within the technical outline drawing of the subject studied as a master it is however used each and put it into the sampling. Participants have been provided master drawing subjected to

elderly sitting furniture as control (Simek, 2013) while its basic dimensions refer to Time-Saver Standards for Interior Design and Space Planning, Second Edition (DeChiara, Panero, and Zelnik, 1992). From that point onwards, the findings and discussion are focusing on the designer inner voice. Throughout the procedural planned out, the research the activities are segregated into three (3) layers of DSDI building methods:

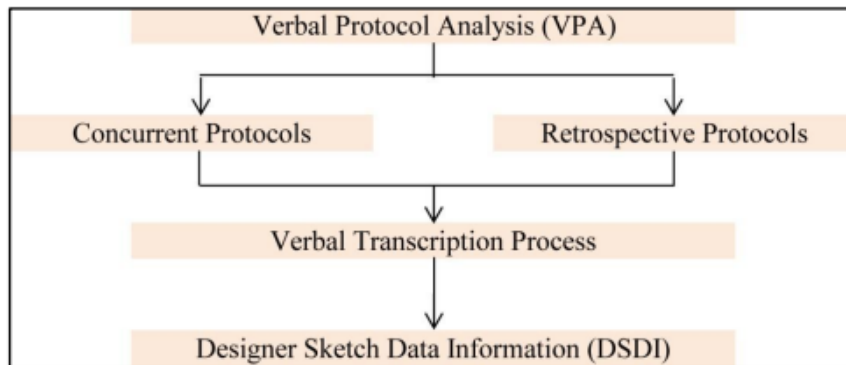


Figure 2. 3 Layers method in building DSDI (Vermol, 2017)

The samples feedback will be drawn on a tracing paper that overlapped on a product technical drawing. While the basic dimensions of technical drawings are referring to Time-Saver Standards for Interior Design and Space Planning, Second Edition (DeChiara, Panero, and Zelnik, 1992). In making the drawing more comprehensible, each product component are being segregated and labelled with points for analyzation to be conducted later on (Vermol, 2018).

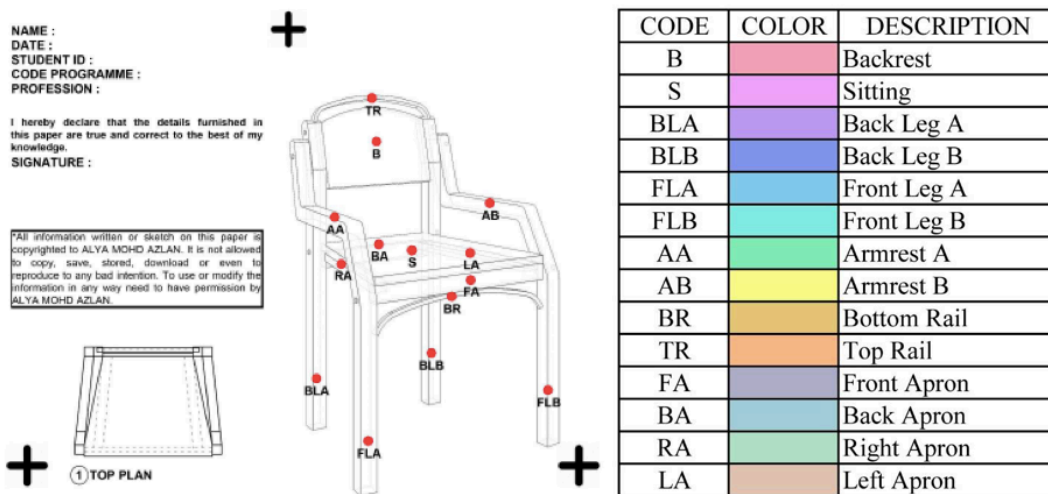


Figure 3: 3 DSDI master template replicating the subject study of Simek, (2013).

5. Results and Discussions

As shown through the percentage of the samples concern components through DSDI. Overall, the highest percentage is 15%, B (Backrest) and S (Sitting). The samples concern more about these components feedback shows senior citizens need comfortable sitting furniture to support their body posture. Through DSDI, their feedback on B (Backrest) are determined through degree angle; whilst some of the feedback is suggested for an adjustable backrest. Plus, suggestion on material most of them suggests soft material because it also gives an impact to senior citizen. As for sitting feedback, respondents discussed further on sitting shape where curve

shape (in front) to support and help them in getting up. Next, 12% goes to BLB (back leg A) and BLB (back leg B). The respondents discussed increasing the stability level is sitting furniture. Their discussions involved the level of legs level that may affect to senior citizen itself. To make that sitting furniture more stable, at the bottom on both legs can be installed with a rubber stand.

Besides that, 9% are being recorded for subject FLA (front leg A), FLB (front leg B), AA (Armrest A) and AB (Armrest B). Based on FLA (front leg A) and FLB (front leg B) feedback, the point from the samples is similar to BLB (back leg A) and BLB (back leg B) even though the percentages are slightly different. While discussion on subject AA (Armrest A) and AB (Armrest B) concerning more on sizes, dimensions and degrees of armrest which to suit for any body size type especially for the senior citizens whilst making it as free size sitting furniture. The other subject points recorded on the armrest that allocates senior citizen gripping space that help them in getting up and down.

Other points of subject feedback stated BR (Bottom Rail) as low as 6% while for bottom rail and TR (Top Rail) indicates 3% which discussing the thickness of the rail and the dimension between rail and backrest for senior citizen fingers to touch. Overall, they were no discussion on FA (Front Apron), BA (Back Apron), RA (Right Apron) and LA (Left Apron). Through the methods used by the researchers, it can be seen how designers can think to create ideas for the comfort of seniors in their daily lives. In addition, overall conclusions have also been made. The importance of sitting furniture for this senior citizen cannot be denied. This is because they need sitting furniture that can help to improve health while ensuring the quality of life. The thought patterns of these samples can help the senior citizens because the view as a designer is not the same as the views of ordinary people. The more understand the design patterns of a product that comes with a good function.

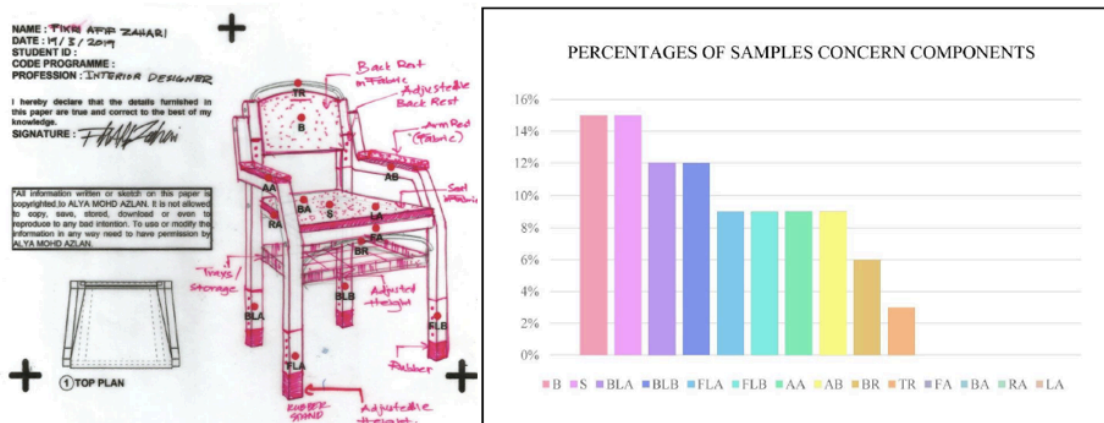


Figure 3. An example of DSDI respondents feedback versus design concern components percentages.

6. Conclusion

Throughout the research, all the objectives have been achieved by the researcher. The objective of the research has been to identify the potential factors in the design of senior citizens furniture. These potential factors have been discovered through research activities conducted by the researcher through secondary data and primary data. From the previous section, the experiment provides an understanding of the reality feedback concerning designers thinking inflicting to the mediating subject for elderly. In extending further discussions on the establishment design activity from the context of adapting designers to elderly users' state of condition; concerning product performances, this section described how design thinking is initiated through design tasks that 'body storming designers to blind experience. Through collective literature overviewed (Vermol, 2017) described the third category of the empathy design process to approach users understanding contains techniques for designers to step into the role of the user and use a role-playing approach to feel experiences; techniques that are including 'product handling', 'experience prototyping' and 'body storming'.

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