



# Design Practice: Sketching Strategies to Facilitate the Design Concept in Design Development Among the Product Design Students

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**Abstract.** Product design sketching is the heart-treasure of the beginning between the initial and reality of form-making whilst presenting the phenomenon of design development. It was formed as a communication medium with others to portray the ideas, convey concept design, share thoughts, optimize and solve the design issues as visual language and stimulate the constructive comment, critique and discussion among the clients, lecturers and public. As a product design student at any level of study, the sketching process becomes 'Standard Operation Procedure -SOP', and it is vital during the design development after the research stage. Introductory sketching module and being exposed frequently to studio projects encouraged the sketching activities to grow and tailored the individual skill naturally. There are many pathways to stipulate the sketching strategies to associate with concept design as the sketches do not evoke any reality figure, relevant, significant or accurate scenario. Therefore, the drawings are not subjectively mandatory at a very initial or prescriptive level to facilitate the project outcome. However, it has a potential strategy for strategizing the sketching anatomy during the design development. Not many of the students in product design naturally can transmit the sketching strategies and synchronize the concept design easily into a suitable method. They are more often familiar, and they demonstrate an excellent verbal presentation of the concept chosen based on the research finding instead of using sketch strategies to explain.

**Keywords:** sketching strategies · concept design · product design · design development

## 1 Design Process

In product design, the design process was the most important rule to be implemented in design development and before executing the project's goal. Thus, the theoretical and practical design process has been developed and described in many models and methods among researchers, educators, and confluence. For example, a typical design process applied to product development might include considering thousands of issues associated

with cost, assembly, appearance, usability, manufacture, sustainability, export, competitiveness, standards and patents, among others (Lance n. Green and Elivio Bonollo 2004) 1. Meanwhile, there is a wide range of perspectives in other extensions to study the product design process, including technical problem solving, social networks, and theory/philosophy, including information behaviour, sketching, and shared understanding (Shuang Song, 2004). However, this paper only narrows to drawing strategies based on concept design understanding instead of multiple viewpoints in the design process.

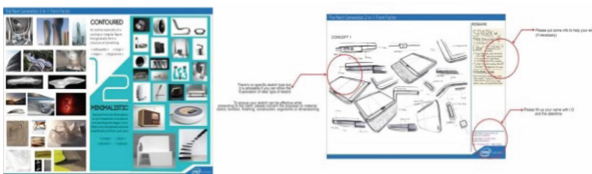
## 2 Importance of Concept Design and Sketching

One of the segments in the design process for product design is to reform the concept design accordingly to the research outcome. It was a significant process to facilitate the design decision afterwards and the first shield to chunking the idea in. Concept design is the solution to a problem that has not yet been solved or has been solved unsatisfactorily (Jergen Rosted, Tobias Lau, Casper Hegenhaven and Pernille Johansen 2007). It shows us what problems the product will solve, how it will solve them, and what it will feel like as it is solving them (Geoff Hedges, 2011) (Fig. 1).

Even though the process in concept design does not portray the reality and amalgamation of final decisions in design development, it has become an essential method among the product design students to plan an adequate step. (Ryan Singer 2013) in his article ‘Vital Elements of the Product Design Process,’ he said, “A product concept gives you a map of the territory you are trying to cover during the implementation”. It was an informal contribution of knowledge shared and investigated the potential concept descriptions and rationale. It transmits the relation and interaction between students and others before starting to strategise the outbound in sketching territory.

According to (Camile Moussette) again, sketching involves representational skills working towards inventive and creative purposes and; sketching can be framed as a form of play where the rules of drawing have been momentarily relaxed. It is also supported by (Mike Rohde, 2011) in his article Sketching: The Visual Thinking Power Tool, “When you are sketching, your mind is free to play and explore other directions that surface”.

Thus concept design and sketching strategies must be conveyed the information of ideas and derive sufficient application. With the manageable of sketching properties to the dedicated design project, it can strengthen functional communication, fasten the process and economically save. There is no quicker method for exploring multiple visual solutions than sketching (Sean Hodge, 2008) in his article ‘The Role of Sketching in the Design Process’.



**Fig. 1.** Concept Design Mood board and sketch



Fig. 2. Concept Design Mood board

### 3 Extracting the Concept Design

Significantly, the design process begins with identifying the need and potential problem. Afterwards, the research or survey to be conveyed accordingly to a dedicated issue or scenario will be a compulsory process for the student to strengthen their finding and soon support their outcome. The establishment of concept design becomes a key starter for sketching stages from initial to further with some prescriptive information before the final method is selected (Fig. 2).

Furthermore, it will continue with technical properties such as dimensioning, selective materials, ergonomics, finishing, construction, assembly, and technological application. Finally, an initial scale model or mock-up study will determine the function, appearance, proportion or scale and some performance issues before the model making or prototype session.

Essentially, the concept design was the structure of in-between of project interest, guideline and project outcome. It stimulates the action to focus narrowly on the design issue and finding for design development. It leads the students in a specific direction and efficiently develops the design afterwards. In other words, the concept design becomes the first shield and framework behind the design development activity. For instance, having the concept of 'tough' may be contributed to design sketching with a solid form with thick and heavy outlooking, material selection with durability and resistance, or the finishing not too quickly to be faded or loose; and extended-lasting usage.

In research findings, there are many patterns and styles to represent the choices of concept design by some descriptive words that can define it. The properties in concept design with descriptive definition; such an example: shape – 'organic or geometric', texture – 'smooth or coarse', movement – 'swirling or flowing', colour – 'naturalistic or vibrant', scale – 'full scale or scale down and others, may facilitate the design development through the project outcome. Hence, the concept design should be fully understood instead of verbal explaining during the design stage. Hence, the potential of sketching strategies by understanding the concept design can be narrow as below in sequences of processes.

## 4 The Project Distribution, Guideline and Project Outcome

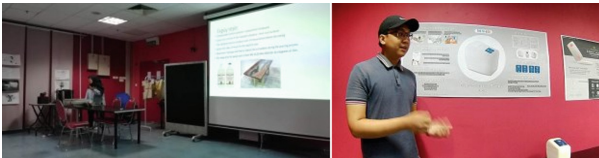
### 4.1 Project Distribution

#### (i) *Project from internal (Faculty program)*

The most common design project came from the respective lecturer in the faculty program. It was internally formed and designed to suit the introductory level of study, from junior to senior levels (Fig. 3).



**Fig. 3.** Project briefing from lecturer in faculty program



**Fig. 4.** Self Directed proposal



**Fig. 5.** Project discussion from client (collaboration)

(ii) ***Project by self-directed (student proposal)***

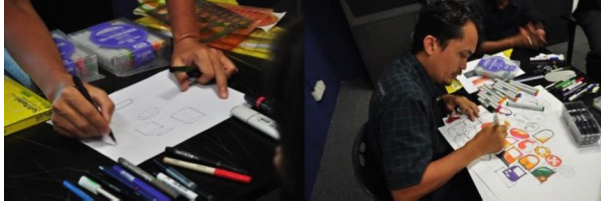
The self-directed project came from the senior student level, basically the final year. It has a timeline as the primary reference, and the student had to propose their project topic. The lecturer will facilitate the student on discussion, critique and progression to ensure the outcome at the end (Fig. 4).

## **5 Project from External (Collaboration Project)**

In addition, there is a design project in particular collaboration with a potential client from industry, NGO, university partnership, government, agency or individual project (Fig. 5).

## **6 Guideline**

Sketches are the most valuable tools to express the idea, describe what we are thinking and preliminary action to convey the goal to others. It portrays many properties in visual communication and engages closer with a design solution. There are so many guidelines, procedures, tips, motivations, step-by-step learning practices, sketching demos, published articles, sketching books and others to help the product design students. The



**Fig. 6.** Sketching guideline/demonstration

lecturer also will contribute to and motivate their student by assisting, supervising and criticizing relatively into the process (Fig. 6).

However, how many can compose the sketching strategies equally and visually show an impressive and significant concept design chosen? Therefore, this paper does not aim to predominant natural talent and skill in sketching development but to discuss the structure and organizational guidelines, which engage the potential apparatus to facilitate the concept design during design development.

## 7 Project Outcome

The project outcome was an important goal and achievement of a dedicated design project. The project outcome from design processes is embedded in several stages. Many causes factors may interfere, and it was a challenge for students to focusing the project outcome. Thus, the excellent project outcome is naturally associated with understanding overall design processes and derived from the significant tacit of information at the end. Hence, the concept design must be fully understood and intriguing the sketching strategy afterwards.

## 8 Sketching Properties (Students Preparation)

### 8.1 Self-conflicting

The issue of self-conflicting not only narrowly to the project's domain has been assigned. Significantly it happened when the research stages, progress is merely not the insight of understanding body and knowledge contribution. It easily can be caused by frustration and misunderstanding further. Furthermore, this conflict is not the prime issue in the overall process (Fig. 7).

However, it has contributed to the student's insufficient planning of the sketching strategies prior to choosing the concept design. Sooner it will end up with irrelevant activity in sketching strategies, eliminating the ideas slowly, repeatedly same design, inadequate to demonstrate and less defense their creative thinking through sketching development.



**Fig. 7.** Example of self-conflicting on sketching development



**Fig. 8.** Sketching instruments in market

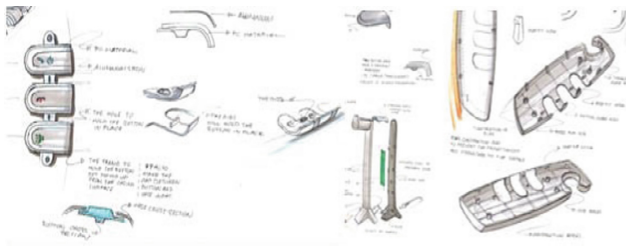


**Fig. 9.** Various pen for design sketching

## 8.2 Managing Sketch Instruments or Toolkit

Sketching with pencil and paper can promote various forms of communication with oneself and others (David G.Hendry, 2006). According to (Osakue, E), generally, drawing tools refer to the materials used as aids when creating drawings, and they vary from simple to complex instruments and equipment. The sketching instruments among product design students nowadays not only refer to a set of paper and pen but are narrowly complex and demand a high understanding of the relation the usability and ability. In the ‘Basic Guideline in Product Sketching’ article, choosing appropriate equipment makes it possible to express your ideas in the best way and create a visual connection of your product with clients (Karina Sokolova). Furthermore, the dedicated sketching strategies through suitable instruments can economically save much cost and time-consuming and convey a better visual appearance relative to the concept design chosen (Figs. 8 and 9).

The design process is based on using a variety of tools and media in the extensive simulation of design hypotheses (Philip Thiel, 1981). The manageable of sketching instruments for product design sketching required a need by multipurpose and not necessarily to buy multiple expensive brands and types to perform better sketches. The various selection and complexity of choices can evoke some issues among students



**Fig. 10.** Sketching vocab/description

if they cannot understand the instrument's properties. In 'Drawing For 3-Dimensional Design' (Alan Pipes, 1990), he said 'Designer or not, most people will be familiar with the instruments of writing and drawing; they are effectively the same; they are both used for making marks and communicating ideas'. He adds; that each has its place in the designer's toolkit and categorizes these products, identifying them according to their most appropriate place in the design process.

### 8.3 Design Sketching Vocab

From the beginning, any part of sketching is essentially a common way of visual communication. The sketching anatomy links each other to portray the sketch in-independence value, such as line drawing, shading, coloring, symbol, composition, perspective, gesture, shadow, form, balance, texture, and others. In product design sketching, the sketching anatomies above are not the only visual message to be delivered to others, but it requires another principle to circulate the message effectively. So, how does design sketching vocab works? In other words, the sketching vocab constantly refers to sketching descriptions whereby the audience can understand in overall detailing (Fig. 10).

Adding an appropriate design sketching vocab can broaden the understanding of sketching presentation and demonstrate the essential data for others to evaluate the way of acceptance. In this case, a particular symbol or icon such as 'arrow', 'dialogue box' 'diagram' and 'background type' conclude a part of the design sketching vocab.

### 8.4 Surrounding Implication

When sketching in a favorite area and space will be able to motivate some students to stimulate their sketching activities better. Many implications may involve during the design development with multiple surrounding implications. Managing the specific principle of sketching strategies involved exposure, experience, and skill, but some significant and potential surroundings affected the appearance of design sketching. Identical to favorite tools to compose a better sketch, surroundings also evoke students to take a step further in design development. Therefore, the surroundings stimulate the student's ability and seriously enlighten their progress, whether helping them better sketching strategies or not affecting them much, it still refers to individual behavior within the timeline given (Fig. 11).



**Fig. 11.** Surrounding for sketching ambient



**Fig. 12.** Sketchbook appearance practice

### 8.5 Composed the Sketch Appearance Practice

Preparing the product design sketch into a dedicated sketchbook will be a long process. However, in design development, the preparation and practice of having a dedicated sketchbook instead mingle with loose paper is a must and compulsory. Since sketchbooks become sincere to the cognitive process, distributed in different viewpoints and diverging the ideas relatively into the project outcome, the appearance practice on sketchbooks commonly listed as i) Standard size of sketch paper/type, ii) Front cover, iii) Dedicated sketch layout design and iv) Distribution of sketching hierarchy and arrangement (Fig. 12).

- i. *Standard size of sketch paper and type*  
The standard was the A3 size (420 mm × 296 mm) used for sketching purposes. It is recommended with 60gsm–80gsm type, light and economical (Fig. 13).
- ii. *Front cover*  
The front cover is the first impression of the student sketchbook. The indulgence of the front cover can be related to the ongoing project or some minimal graphic usage such as logo, pattern, color, symbol, line stroke, or others that can open the interest and curiosity to know further (Fig. 14).
- iii. *Dedicated sketch layout*  
Another principle of sketch strategy for product design students is reforming and designing the dedicated sketch layout. The anatomy of the sketch layout in a design project depends on how the student would like to design it. However, the importance

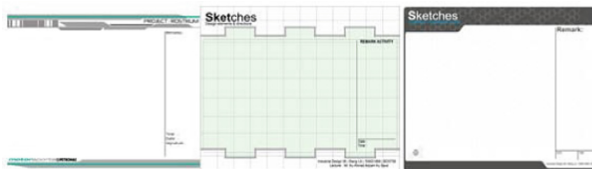




**Fig. 13.** Standard A3 size for sketch book



**Fig. 14.** Sketch Book front cover



**Fig. 15.** Example of basic sketch layout

of a sketch layout with dedicated column areas to facilitate the sketch activities for others will help quickly synchronize ideas with outbound them from confusion. In the most basic, every sketch layout will consist of the title of the projects or theme setting, remark area for additional info added and date or time (optional). This practice embraces and shows the sincerity of the design development and welcomes the potential get-to-know, indicating fewer questions to be asked and efficiently facilitating the students' presentation (Fig. 15).

iv. Arranging the sketches based on the hierarchy

Every student will effectively arrange their sketching from the first to the end progression. This will ensure they easily prologue their progression and stipulate all the needs immediately. It can start with composing and loading the research stages, concept design development, idea development processes, technical documentation, final design details, etc. All this practice can guide the students and easy tracking all development during the discussion, critique session or presentation (Fig. 16).



Fig. 16. Arranging the sketching by hierarchy

## 9 Conclusion

In conclusion, we hope an accessible and potential guideline can be proposed among the product design student during their concept design and managing their design development. It will be able to justify the dedicated process by understanding the concept design properties and characteristics which can be a prologue to the sketching strategies. Furthermore, identifying and selecting appropriate sketching tools will significantly guide the student effectively. This paper has identified several issues during the sketching development, such as self-conflicting, managing sketch instruments, sketching vocab, surrounding implications and composing the sketch appearance practice, which enables to be associated with the concept design. Hence, we hope this paper can be further in-depth in developing and offer insight guidelines for product design students in their related preparation and planning into their product design study.

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