ABSTRACT

Design process is the most important key for successful design works. Thus, how to modularize an optimal design process which is clearly, simply, especially it is easy to apply within various spatial types will be the problem in the design education industry. To develop such a process will be the goal for design education field for the long time. Hotel is a place with complexity functional spaces to architectural design professional. Thus, the process of hotel design is most important to anyone who designing a successful hotel, especial a large hotel. In order to modularize a correct sequence of design process, the process of hotel design will be one of best model to be used as template for further application in other type of space design.

Except the traditional design process, the process developed by Hilton Hotel and Hamilton's Evidence-based Design (EBD) Model will be the basic template for us to develop an optimal process. The design process model will take into account the application of the scenario analysis and contemporary design principles such as universal design, accessible design and five senses design, simultaneously. The methods of Scenario analysis and Evidence-based design will be employed to analysis and correct any information related to the design topics which can lead to the destination of a well design works. The design process model will produce in the meantime. A practical process of a design process which including most consideration related to interior design will be created in this literature. The result will contain the process and the most familiar principle of contemporary design thinking. This process will be helpful for all designers to follow it to produce their effective and efficient design project.

KEYWORDS: Interior Design, Design Education, Design Process, Hotel Design, Scenario Analysis

INTRODUCTION

Background/ Objectives and Goals

Process is the sequence of design steps for various design works. Whatever any kind of design, commercial design, interior design, and architecture design etc., a suitable design be adapted to apply will be the most important key and base for any successful design works. Thus, how to modularize an optimal design process which is clearly, simply, especially it is easy to apply within various special types will be the problem in the contemporary design education industry. To develop such a process will be the goal for interior design education field for the long time.

Hotel is a place with complexity functional spaces to architectural design professional. Thus, the process of hotel design is most important to anyone who designing a successful hotel, especial a large hotel. In order to modularize a correct sequence of design process, the process of hotel design will be one of best model to be used
as template for further application in other type of space design.

Except the traditional design process, the process developed by Hilton Hotel and Hamilton’s Evidence-based Design (EBD) Model will be the basic template for us to develop an optimal process. The design process model will take into account the application of the scenario analysis and contemporary design principles such as universal design, accessible design and five senses design, simultaneously.

METHODS

There are several models that will be taken into account which including Universal Design, Accessible Design and five senses design through the method of scenario analysis and a practical example which located at Yangshuo, China. The process implemented by Hilton worldwide and Hamilton’ Evidence-based Design process will be employed initially in order to create a new design process integrated with these new contemporary design trend. Meanwhile, there need a wide range of various approaches and methods to assess environmental issues for identifying relative concerns analyzing problems and testing possible option of solution. Thus, the method of Scenario analysis might be one of the best choose to deal with these matters all together. The definition of Scenario analysis has been made by Joseph Alcamo and Thomas Henrichs as below (J. Alcamo, T. Henrichs, 2008):

**Scenario analysis** is a procedure covering the development of scenarios, comparison of scenario results, and evaluation of their consequences. A key idea is to explore alternative future developments. The goal of environmental scenario analysis is to anticipate future developments of nature and society, and to evaluate strategies for responding to these developments.

However, why it is effective to build scenarios analysis for the environment assessment? Because, it can provide an interdisciplinary framework for analyzing complex environmental problems which it also can consider the interactive between human behaviors and their surrounding environment simultaneously. Furthermore, it might also offer particular envisioning solutions to these problems. Accordingly, scenario analysis might be one of optimal method be adapted to interpret the human behavior for developing design process.

RESULTS

A optimal process which can be applied within multi-functional space or building will be creative based on the design procedure of hotel. This process consists with various several contemporary design principles which including the principle of universal design, five sense design, user centralization and the effects of physical, physiological and psychological are also take into account, concurrently. All of applications of these design principles will be consider at same time through the method of scenario simulation at various possibilities. Consequently, a universal design process that suitable for design education will be produced. This process for relative design education can be a whole thinking about the effects that might affect the user in the space of environment. The process produced by this study might be helpful not for all students but for all designers for their design projects.

**Scenario Analysis the Activities**

The scenario of the customer’s behavior from approach to hotel till the end of check out is simulated according to various situations. All possibilities about the user behaviors related to all the activities of our work, living, leisure and recreation should be considered at diverse circumstances such as the time of day and night, the weather of sunny and rainy
day, the method of moving ex. by car or walk, moving with baggage or not, even the abilities of different persons ex. elder, baby or youth, female or male, tall or short etc.

**User’s issues**

- **Ergonomics**: Physical, Physiological and psychological
- **Abilities of Persons**: Female / Male, Tall / Short, Baby / Youth and ...
- **Five Senses**: Touch, Taste, Smell, Hearing, Sight
- **Tool of Movement**: Walk / Bicycle / Car, Carry baggage / Free, Wheel chair / baby car and ...

**Environmental issues**

- **Natural**: Day / Night, Sunny / Rainy, Hot / Cold, Breeze / Storm
- **Indoor and Outdoor**: Color, Texture, Lighting, Height / Width, Proportion / Scale, Material, Flat / Ramp / Height, Circuitous / Straight, Dark / Bright, Direct / Indirect, Clear / Ambiguous, light up / ...

Figure 1: All Possibilities of Different Human Behavior and Abilities Versus the Environment at Various Circumstances for Scenario Analysis

Figure 2: Customer’s Circulative Route and Behavior Relative to the Hotel Space Together with Five Senses Analysis (T.C. Wu & S.M. Peng, 2016)

**Five Senses Consideration**

Five senses always are the key consideration for all types of design fields. Here, five senses are attached to previous hotel space based on the Customer’s circulative route, behavior and possible perception of the user when they interact with these environments Figure 2. All the elements of the different hotel space should take into account what kind of sense might be given to the customer at any particular space of hotel. These different senses should be connected to all
activities of the customer from check in till check out which including any movement or activities in and around the hotel. The design consideration should positively response these feeling and senses received by customer, staff and manager director etc.

**Universal Design**

The principle of universal design is the most principal design rule in the world currently. It’s engage here is aim to support the majority of people who with various living abilities. Based on the definition made by the Center for Universal Design, universal design means the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. Seven principles of universal design were described as below (The Center for Universal Design, 2015):

- **Equitable Use**: The design is useful and marketable to people with diverse abilities.
- **Flexibility in Use**: The design accommodates a wide range of individual preferences and abilities.
- **Simple and Intuitive Use**: Use of the design is easy to understand, regardless of the user’s experience, knowledge, language skills, or current concentration level.
- **Perceptible Information**: The design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities.
- **Tolerance for Error**: The design minimizes hazards and the adverse consequences of accidental or unintended actions.
- **Low Physical Effort**: The design can be used efficiently and comfortably and with a minimum of fatigue.
- **Size and Space for Approach and Use**: Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user’s body size, posture, or mobility.

![Figure 3: The Process of Universal Design within Architectural Design](image-url)
Furthermore, there are another three supplementary principles added by Nakagawa (2006) which are commonly accepted by this filed (Nakagawa, 2006).

- Durable with economic efficiency
- Good quality and artistic
- Harmless to human and environment

Thus, it is necessary to integrated the process and thinking of UD within design process. There are an illustration to shown this operation about the design with UD thinking (Figure 3, Japan Facility management Association).

Evidence-Based Design

Evidence-based design (EBD) was developed by The Center for Health Design. Basically, EBD means the process that employs the results of study to design building environment (Susan M. W, 2007). Meanwhile, WHR Architects’ nine-step EBD process is one of the most famous and clear EBD process and it will employed to set up our initial design process model (Hamilton D.K. & Watkins D.H., 2009). These night design processes can be a typical process for designer to do practical design jobs for problem solution Table 1.

<table>
<thead>
<tr>
<th>Task and Process</th>
<th>Activity</th>
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<tbody>
<tr>
<td>1  Identify the clients goals</td>
<td>Note most important and facility-related global and project-based goals</td>
</tr>
<tr>
<td>2  Identify the firm’s goals</td>
<td>Understand the firm’s strategic, project and evidence-based design objectives</td>
</tr>
<tr>
<td>3  Identify the top 3-5 key design issues</td>
<td>Narrow the possible choices; work on high impact decisions</td>
</tr>
<tr>
<td>4  Convert design issues to research questions</td>
<td>Reframe statement of design issues to become research topics</td>
</tr>
<tr>
<td>5  Gather information</td>
<td>Infinite possibilities must be narrowed; limited perspectives must be expanded</td>
</tr>
<tr>
<td>6  Critical interpretation of the evidence</td>
<td>No direct answers; requires open-minded creativity, balance, and critical thinking</td>
</tr>
<tr>
<td>7  Create Evidence-based design concepts</td>
<td>Based on creative interpretation of the implications of research findings</td>
</tr>
<tr>
<td>8  Develop hypotheses</td>
<td>Predict the expected results of the implementation of your design</td>
</tr>
<tr>
<td>9  Select measures</td>
<td>Determine whether your hypothesis is supported</td>
</tr>
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However, this process model might be limited only focus on the problems solve. The key problem of designer to design a comfortable and friendly project is the process of the design. Thus a new process for each designer to follow should be established on the contemporary method and principles; especially it should take into account the perception of the user’s body, mind and spirit.

Process of Hilton Hotel Design

Hilton hotel is one of the most famous and successful hotel groups in the world. The Hilton

Worldwide Architecture & Construction team is dedicated to working with the hotel’s development partners, owners, and franchisees. The professionals of the team will support all the project requirements throughout the entire
architecture and construction process. This process will be described below Figure 4

- **Project Definition**: During the initial stages of the hotel development process, design team will assist with establishing optimal project programs.

- **Consultant Selection**: Establishing a superior team of professionals which including architectural, engineering, and financial etc. are essential to a successful design project.

- **Space Planning and Design**: Design experts should work with managerial team to develop rational architecture space and operational relationships.

- **Interior Design**: Interior designer might offer their assistance with a focus on cost-effectiveness based on the principle of visual esthetics and user centralize.

- **Engineering System Selection**: Expert team well provides information on sustainable system solutions, to improve the performance and energy-efficiency of the project.

- **FFE/OSE Specification & Procurement**: Whether it is refurbishing or building a new property, designer should assist owner and operator to identifying durable, cost-effective product solutions which including Furniture, Fixtures, and Equipment (FFE) or Operating Supplies and Equipment (OSE); and it should compatible with the design concept.

- **Construction and Fit-Out**: Expert team will provide project management to support the timely progress of the project including quality, budget and schedule.

- **Handover to Operations**: From initial to opening, team should ensure the property will transition smoothly to operations, meeting and exceeding all of design and managerial expectations.

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**Figure 4: Process of Hilton Hotel Design**
The main goal of this manuscript is to create an optimal design process for design education through the process of hotel. This process should integrate almost contemporary methods, principles and thinking mentioned above which including scenario analysis, five senses consideration, universal design and evidence-based design. The main goals of a hotel for customer is to restore their physiological and psychological fatigued of body, mind and spirit during their traveling. Actually, this goal also will be all kind of building spaces that are created for our living, work and leisure.

Thus, to develop a hotel as a healing environment also is the subject of all designers. Several essential elements of healing such as abundance of sunny, fresh air and clean water also should be considered when doing the design development (Wu, T.C., 2013). All these issues can be concluded into the field of environmental design which concerning about the effects related with physical, physiological and psychological affect the perception of users body, mind and spirit.

Furthermore, the design process also has to take into account the requirement of operational and manorial team. The experience and knowledge of these experts is important to complete a successful project. These practical experience and knowledge will affect the design of project deeply.
The traditional six design process can be illustrated as the left of Figure 6. However, we have to take a lot of deliberation into this process, thus the figure might be changed to the whole Figure 6 with key points at right hand side. The principle, method and process mention above are added at the end of each traditional process. Then, this process no more a pure and simple item, it contain the key issue should to take into account when a designer is take a design job. It is believed, a comfortable and friendly space will be designed if designers can flow an optimal design process that contain all the principle mention above for their professional jobs. Therefore, the three processes mentioned above i.e. traditional, EBD and Hilton process should be integrated based on the practical experience and educational principle which as shown in Figure 7.

Figure 6: Integrated Traditional Process for Hotel Design

Figure 7: Integrated Optimal EBD Base Process for Architectural Design
Furthermore, it means a detail of check list and criteria for the purpose to evaluate the design successful or not should be created all together. It is shown as Figure 8.

![Figure 8: Integrated Optimal Design Consideration for Architectural Design](image)

**A Practical Example – Misty River Boutique Hotel**

The Misty River Boutique Hotel located at Xing ping town of Yangzhou, China where is a place with karst topography in the world Figure 9-10. The first principle of hotel’s refurbish is merging into the natural environment to provide all the customers have a restorative accommodation during their travel. The work of plan and design was following the process of Figure 8.

![Figure 9-10: Geographic Locations and Nice-View of Xing Ping](image)
All the principles and theories have been transferred into a check list and taken into account during the planning and design stage of this project. However, this check list should be revised again and again to specialize for various particular spatial and building types. The routes of customer, staff and service have divided into three courses as shown in Figure 11. The route of customers was separated into by walk and car. The route of service also divided based on the characteristic of services. All physical and psychological requirements of customers have been considered in order satisfying the customer and achieving the goal of restoration at the same time. All the possibilities related to the 7+3 principle of universal design when the interior design work was carried out within all public spaces and guest rooms (Figure 12-13). Two special universal design guest rooms were located at second and third floor near the exit of elevator hall.

Figure 11: First Floor Plan of Misty River Boutique Hotel
REFERENCES


2. The Center for Universal Design, North Carolina State University, Retrieved from https://www.ncsu.edu/ncsu/design/cud/


