A COMPARATIVE STUDY OF THE ADMISSION EXERCISES AND THE CREATIVE DEVELOPMENT PROCESSES OF STUDENTS STUDYING DIFFERENT DISCIPLINES OF DESIGN AT TWO DIFFERENT DEPARTMENTS OF THE SAME UNIVERSITY

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ABSTRACT:

In fashion, it is said that when real time communication wan not that developed and worldwide web did not exist, the farther one place was from a fashion capital, say Paris, the longer it would take for that place to adopt the latest fashion. This geographical distance or proximity also seemed to have similar effect on people's receptivity to the latest fashion trends, i.e., people in places closer to a fashion capital tend to be more receptive to new ideas and/or fashion whereas those farther from it tend to be less receptive to such influences. The scenario is also true even in the same place under one roof. The leader who runs different unit under one roof could have distinctive and different influences the cultural attribute. If such units are academic and educational in nature, the leadership style and their respective beliefs will affect the learning and outcome of their students. As for those who work under the leaderships, the systems and policy setting up by the leader determine the holistic outcome of performance of their workers as well as the units regardless of their actual mindset. The agreement of the workers with the style of their leader often results in positive ethos, and vice versa.

This paper reports the findings of a study whose main objectives are to identify the design processes currently deployed by students of the Hong Kong Polytechnic University (PolyU) studying various disciplines of design in Institute of Textiles and Clothing (ITC) and School of Design (SD), and to compare the similarities and differences among them. A questionnaire was design based on the five-phases-model by Kneller (1965) and administered by convenience sampling to 40 subjects from two design-related academic units of the PolyU. The software package Microsoft Office Excel was employed to facilitate data analysis.

Results show that the focus of the admission exercise of SD is on creativity and personality and whereas that of ITC is on overall academic performance and English proficiency. A large

number of ITC respondents would determine to end the design process by judgment when compared with that of the SD respondents. Only 5% of them did so by time, i.e., deadline. 75% of the ITC design students preferred creativity-oriented design whereas only 50% of the SD respondents preferred the same. ITC respondents tended not to consult experienced persons such as university professors and technicians but using the trial-and-error method instead. Only half of them would base their synthesis on the information collected. Most of the ITC respondents seemed to have neglected the initial stage of the creative process. Result also revealed the 'verification' step (Kneller, 1965) being rarely attended.

Keywords: Leadership style, Culture and ethos, Design admission Process, Design development processes, ITC and SD

1. BACKGROUND

Due to changes in the design industry, the workload of designers has increased tremendously. Today, designers need to be creative and prolific than ever to meet the challenges of the fast moving industry. The design processes too, have revolved from its deep-rooted tradition to ones of different methodologies, each of which proved to be the most suitable and effective for a specific situation and creative group. This paper reports the admission tests of two academic units, namely Institute of Textiles and Clothing (ITC) and School of Design (SD), of the Hong Kong Polytechnic University (PolyU) whose programmes involve creative processes and generalises and theorises the respective design development processes of the students in these two academic units with which to evaluate and compare the patterns, if any, depicted in the current practices of these students. Based on the literature, this paper presents a chronological review of the design processes with an aim to elucidate the ways by which design students "create" and the stepwise processes they go through. The philosophy underlying this study is to provide a reference for design students as well as designers for enhanced output, productivity and the quality of work.

2. THE STUDY

The purpose of this study was to generalise the design steps in the creative development process with which to study and compare the creative patterns, if any, among the design students at ITC and SD of the PolyU. To this end, a review of prior literature on design development and processes was conducted and a questionnaire was designed and administered to these students to acquire an understanding of their design development processes. In the light of the literature, comparisons were made between the design processes adopted by these students.

3. THE METHODS

This study focused on the design development process of the second year students of undergraduate programme and had had design experience specialised in fashion design at ITC and design students in the SD of the PolyU. Data were collected by desk research and questionnaire. The data were analysed and interpreted. Information was organised and

presented in the following chapters. The study required both secondary information and primary information to generate the results. Secondary information was those obtained from relevant literatures, journals, reports, newspaper clippings, magazines, the internet and electronic databases. Primary information was those from the questionnaire surveys. The literature review was to collect relevant information from sources such as academic journals, textbooks, magazines, newspaper clippings to establish a theoretical framework for data analysis. The primary information collected by the questionnaires for the target students gathered the information about the design processes of them as well as their demographic data for analysis. The convenience sampling method was used due to the peculiarity of the subjects to the matter of study. In this study, the software package Microsoft Office Excel was employed to facilitate the data analysis process and presentation. It allows the numerical data to be organised in table and graphical format. Commands such as frequency, means, percentage, table, histogram and other descriptive tools were used for analysis the findings. The project was largely based on the questionnaires distributed to the subjects and the information derived from the literature. Due to time limitations, a total of 135 sets of questionnaire were distributed, 80 of them were returned. The sample size of this research may not be large enough to represent the varieties and complexities of the students' design processes at the Hong Kong Polytechnic University. Voided questionnaires were basically due to decline to complete the questionnaire or misunderstanding or misinterpretation of some of the questions in the questionnaires by individual subjects.

4. THE ADMISSION TESTS

For JUPAS application, ITC of the PolyU adopts a shortlisting of applicants to the Scheme based on their scores in the Diploma of Secondary Examination (DSE). The DSE scores are to be calculated into one peculiar to the ITC preference and requirements, i.e., currently the best five DSE subject scores with a pass in the Chinese and English language. The shortlist applicants will be invited for a Drawing & Design Test. Shortlist applicants are further invited for an interview, during which they are required to present their folio of work to the interviewing panel. Applicants for JUPAS applications for the undergraduate programmes of the SD are first shortlist for an aptitude test. Further shortlist applicants will be invited for an interview, during which they are required to present their folio of work to the interviewing panel. For the Non-JUPAS application (e.g., applicants from the Higher Diploma Scheme of ITC and those from local and non-local design institutions other than PolyU), ITC will shortlist them based on their GPA scores or the equivalent. Shortlist applicants will be invited for an interview, during which they are required to present their folio of work to the interviewing panel. SD requires their non-JUPAS applicants to send in their folio of work for assessment. Shortlist applicants will be invited for an interview.

5. THE DESIGN PROCESS

Design is the process and product. Even through there are many different variations of the design process, ranging from very broad to very specific applications, the process always consists of the basic steps to be taken before a goal is finally met or product produced. It is defined as the translation of information in the form of requirements, constraints, and the

experience into potential solutions which are considered by the designer to meet required performance characteristics. In 1993, Voelker-Ferrier suggested that some creativity originality must enter into the process for it to be called design. If the alternative solutions can be written down by strict calculation, then the process that has taken place is not design (March 1976). A chronological review of the literature suggests that most of the design theorists defined the design process as a three stage process, namely analysis, synthesis and evaluation/ appraisal. In 1970, Markus and Maver suggested that the analysis involves the exploration of relationships, looking for patterns in the information available, and the classification of objectives. Analysis is the ordering and structuring of the problem. Synthesis on the other hand is characterised by an attempt to move forward and create a response to the problem — the generation of solutions. Evaluation/appraisal involves the critical evaluation of suggested solutions against the objectives identified in the analysis phase (Voelker-Ferrier and Hall1993; Markus 1969). According to Ackoff (1970), design is a process of decision making (Maver 1970), which is necessary in each step of design without which progression is not feasible. The process of decision making should consider all the criteria involved to advance the design project to its system specifications and implementation for achieving the selected purpose(s) and goals. Designing is usually concerned with actions to be taken in the future. Therefore, an important reason for the system design process is to improve decision making with respect to the objectives of the application area. Correct decisions can offset many operating handicaps. On the other hand, incorrect decisions, especially in the earlier phases, may hamper all subsequent action, no matter how sophisticated later decisions are arranged. To make a decision is to select a course of action from several. A ‘correct’ decision is the selection of that course of action resulting in an outcome more desirable than from any other selection. The designer acting in creative capacity proceeds believing that a more desirable solution is to be found. Innovation is indeed a departure from the predictions of linear programming. The analytical determination and evaluation of alternatives in tangible terms has long been recognised as an integral facet of the design process (Ackoff 1970).

5.1. THE MODEL

It is possible to construct what may be termed a general model of the design process. This model is based on the broad agreement that exists in the literature on the elements of such a process, in spite of the diversity making obvious in the preceding literature review. Although some early theorists on design methodology may have wishes it, there is no infallibly good way of designing. In design, the solution is not just the logical outcome of the problem, therefore, there is no sequence of operations which will guarantee a result.

5.1.1. STATE OF THE ART AND RECOGNITION OF NEED

The starting point of the design process is more comprehensive than that of the scientific method. Unlike fundamental scientific research, design is motivated by need rather than by curiosity. Therefore, in addition to requiring knowledge of the state of the technical art, McCrory et al (1963) suggested that the design method requires recognition of a need which

warrants an investment of effort and funds (Seiler 1967). Along with the recognition and definition of the need, the design method requires an appraisal of the pertinent state of art. State of the art includes materials capabilities, phenomena understanding, and previous design experience. However, as important as previous experience is, if designers are too limited their conception of it, design process can be reduced to series of small improvements. The design method requires that the designer tap into the total spectrum of technology with the objective of obtaining the greatest design advance consistent with the state of art, wherever the art may exist. Experience which is available in technical or product fields foreign to that of the designer can often suggest the most advantageous design approaches.

5.1.2. STATING OBJECTIVES

Stating objectives is to identify external conditions with which the design must be compatible. These external conditions includes the situation within which the design is to operate; the features in the situation with which the design must be compatible including the user expectations and the reason for them and the resource available. Also, it should ensure that statements identifying the objectives are compatible with each other and with information that becomes available while designing.

5.1.3. STATING DESIGN BRIEF

The design brief is a statement which clearly sets out the problem to be solved. It presents the designer with all the information available about the problem and lists all the things that need to be considered. Specifications given in the design brief will vary according to the complexity of the problem. The design brief will not give the designer any answers, but it should give him all the information he needs to find the best solutions. Therefore, a design brief need to be carefully set out so that they give the designer a clear understanding of the problem to be tackled (Hall 1962).

5.1.4. RANDOM LIST OF FACTORS

The designer writes a list of all the thoughts that occur to him/her on acquaintance with the problem and read out his/her list and all items are recorded in serial order in a random list of factors. No attempt is made to avoid duplication or to omit impractical ideas. In the next step in the design process, there is a complete ban on criticisms or comments on the ideas produced. The object is to get down a large amount of information in a short time in an atmosphere in which all feel assured that no idea will be inhibited. Once the initial reactions and feelings about the problems have been recorded, the random list should be extended until it includes every single factor which could be thought to influence the design (Jones, 1970).

5.1.5. THE CREATIVE PROCESS

In 1924, the mathematician Poincare initially reflected on his own considerable creative achievements in mathematical thought and drew some insights about the creative processes

involves (Jones 1961). Typically he described a process divided into phases of quite different kinds of thought. First, it is a period of initial investigation of the problem in hand, followed by a more relaxed period of apparent mental rest. Next, an idea for the solution appears almost unbidden by the thinker probably at the most unexpected time and in the most unlikely place. Finally, the solution needs elaboration, verification and development. As shown in figure 2.3.9.1, Kneller (1965) identified this general consensus up to five phases in the creative process, which he called “first insight”, “preparation”, “incubation”, “illumination”, and “verification” (Poincare 1924).

The Five Phases in the Creative Process	
First insight	Formulation of problem
Preparation	Conscious attempt at solution
Incubation	No conscious effort
Illumination	Sudden emergence of idea
Verification	Conscious development

Figure 1. The Popular Five Stage Model of Creative Process.

The period of “first insight” simply involves recognising that a problem or problems exist and making a commitment to solve them. Thus the problem situation is formulated and expresses either formally or informally in the mind. This period is normally quite short, but may last many years. In design situations, the problem is rarely clearly stated at the outset and this phase may require considerable effort. There have been designers like Lawson (1994) and Whitefield (1975) who reported the need for a clear problem to exist before they can work creativity respectively. The next phase of “preparation” involves considerable conscious effort in the search for a solution to the problem. There is likely to be some coming and going between this and the first phase as the problem may be reformulated or completely redefined as the range of possible solutions is explored. The common ground about creativity is in period of intense, deliberate, hard work is frequently followed by the more relaxed period of “incubation”. The period of “illumination” refers to the sudden emergence of idea. Quite how and why the human mind works in this way is not certain. Some argue that during the incubation period, the mind continues to reorganize and re-examine all the data which was absorbed during the intensive earlier periods. During the period of “verification”, ideas are tested, elaborated and developed. Very often, the verification period will reveal the inadequacy of an idea, but the essence of it might still be valid. Perhaps this will lead to a reformulation of the problem and a new period of investigation, and so on.

6. THE RESULTS

All respondents in ITC were majored in fashion and textile design. For the SD students, 1 (2.5%) respondent was majored in multi-media design while 3 (7.5%) respondents were majored in interior design. 7 (17.5%) respondents were majored in product design, 12 (30%) were in fashion design, and 17 (42.5%) were in graphic design. For the ITC students, 25

(62.5%) respondents received design training in the past. While for the SD students, 29 (72.5%) respondents received design training in the past. 24 (52.5%) ITC respondents studied arts before university education; 10 (25%) studied science; 7 (17.5%) studied commerce; 1 (2.5%) respondent studied art and commerce; and the rest of the respondents studied art & design whereas 14 (35%) SD respondents studied arts before university; 18 (45%) studied science; 4 (10%) studied commerce; and the rest studied multi-media design and art & design.

For the ITC respondents, 30 (75%) respondents were creativity oriented; 7 (17.5%) were human needs oriented; 2 (5%) for commercial oriented and 1 (2.5%) for required performance characteristics. For the SD respondents, 21 (52.5%) of them were creativity oriented; 8 (20%) were human needs oriented; 4 (10%) for commercial oriented and 7 (17.5%) for required performance characteristics. It found that the numbers of ITC students prefer creativity-oriented design is higher than that of SD students.

A total of 33 (82.5%) of the ITC respondents and 35 (87.5%) of the SD respondents respectively will investigate the problem and requirements before designing. These data reported that the numbers of ITC and SD respondents who will investigate the problem and requirements before designing are quite similar.

A total of 15 (37.5%) of the ITC respondents and 19 (47.5%) of the SD respondents respectively have a specific procedure in a design process. A total of 23 (57.5%) of ITC respondents will think iteratively when they have problem in the design process; 14 (35%) and 3 (7.5%) of the respondents will find solution by trial-and-error and skip the problem respectively whereas 27 (67.5%) of SD respondents will think iteratively when they have problem in the design process; 12 (30%) and 1 (2.5%) of the respondents will find solution by trial-and-error and skip the problem respectively. From these data, it shows that the actions taken by both ITC and SD respondents when they confront with problems in the design process are quite similar.

A total of 29 (72.5%) of ITC respondents and 33 (85%) of the SD respondents reported that they would compare their idea(s) with the existing design in the market. A total of 37 (92.5%) of the ITC respondents and 33 (82.5%) of the SD respondents respectively reported that they design according to intuition. From these data, it can be summarised that there are many students (in both ITC and SD) who design according to their intuition.

With regard to the factors by which the students determine to end the design process, 24 of ITC respondents reported that it was decided by judgment and 11 by experience. The rest of the respondents said by time or deadline. For the SD students, 20 of respondents reported that by judgment and 18 by experience. The rest of the respondents were by feeling. Figure 4.26a shows the details. With regard to the reason(s) when the students frustratingly end a design process, most of the respondents said that it was decided by time, 35 from ITC and 31 from SD respectively were by time. The second highest is by costs, of which 9 were from ITC and 17 were from SD respectively. The third highest is by information, 4 and 17 from

ITC and SD respectively. And only 2 SD respondents said that the decision was done by emotion.

Only 16 (40%) of ITC respondents always pleased with their design but 33 (82.5%) of SD do. These data shows that the numbers of SD students always pleased with their design were higher than that of ITC students.

For the aim of the design analysis, 16 and 27 of ITC respondents are for investigation of the problem and requirements to be fulfilled and assembling of data respectively. But to SD students, 32 respondents are for investigation of the problem and requirements to be fulfilled and 21 respondents are for assembling of data respectively. These data shows that the aim of the design analysis between ITC and SD students are quite difference.

During designing, a high numbers of respondents from both ITC, i.e., 32 (79%), and SD, i.e., 29 (72.5%), reported that they will consider both of the factors which relate to design and other than design. 5 (12.5%) and 9 (22.5%) of ITC and SD respondents respectively said that they would consider factors other than design. Only a few of the respondents responded, i.e., 3 (7.5%) and 2 (5%) of respondents from ITC and SD respectively, that they would just consider the factors directly related to design. These data suggest that a large proportion of ITC and SD students will consider the factors related to design as well as those other than design during designing.

For choosing the design method(s), 23 of ITC respondents and 31 of SD respondents would consider fulfilment of the requirements. 29 of ITC respondents and 21 of SD respondents would consider materials capabilities and/or production techniques. 24 of ITC respondents and SD respondents would consider experience. Only 1 ITC respondent would consider something unique. These data show that the factor(s) considered by ITC and SD students in choosing their design methods are rather similar.

When information becomes more and disordered, 25 ITC respondents and 27 SD respondents would classify them; 15 ITC respondents and 12 SD respondents would prioritise them; 15 ITC respondents and 26 SD respondents would simplify them. One ITC respondent said that she would specify them and 2 SD respondents said that they would re-organise them.

For simulating thinking when designing, 32 ITC respondents and 34 SD respondents choose literature review that includes magazines, technical journals, reference books, etc. 18 ITC respondents and 33 SD respondents would consult experience persons such as academics and technicians. 29 ITC respondents and 35 SD respondents choose observation. 12 ITC respondents and 31 SD respondents would adopt trial-and-error experiment. Only a few ITC respondents choose brainstorming and dreaming. 5 SD respondents use bible and film for simulating design thinking. From these data, it can be summarised that not many students in ITC would like to consult experienced person or take trial-and-error experiment when compared with the SD students.

A total of 12 (30%) of ITC respondents recorded all information for later reference during observation and 28 (70%) of them selected relevant information on the spot. 18 (45%) SD respondents recorded all information for later reference and 22 of them selected relevant information on the spot. For choosing the method for recording, a total of 21 ITC respondents and 29 SD respondents choose capturing by camera; 30 ITC respondents and 33 SD respondents choose drawing them down; 24 ITC respondents and 29 SD respondents choose writing them down; 21 ITC respondents and 34 SD respondents choose recording them by memory; and only 2 SD students choose recording them by computer. See the figure below for details.

A total of 50% (20) of the ITC respondents and 67% (27) of the SD respondents design based on the information they have collected.

A total of 22 ITC respondents thought that individual designing could generate more ideas. 18 ITC respondents said that group designing could generate more ideas. See the figure below for details wheras 21 SD respondents thought that individual designing could generate more ideas. 19 SD respondents said that group designing could generate more ideas. See the figure below for details. It was found that the numbers of students from ITC and SD respondents who thought that the methods which could generate more ideas are quite similar.

A total of 22 (55%) ITC respondents and 32 (82.5%) SD respondents answered that creativity was the most important in design. While 18 ITC respondents and 7 SD respondents thought that originality was the most important. It can be summarised that most of the SD students think that creativity is the most important factors in design.

The survey revealed that 32 (80%) and 36 (90%) ITC and SD respondents respectively believed that their creativities come from internal factors, and the rest of the respondents thought otherwise, i.e., 8 (20%) and 4 (10%) ITC and SD respondents respectively.

with respect to the creative process, 13 ITC respondents and 28 SD respondents went through the “first sight” step; 12 ITC respondents and 29 SD respondents went through the “preparation” step; 13 ITC and SD respondents went through the “incubation” step; 35 ITC and SD respondents went through the “illumination” step and only 3 ITC respondents and 13 SD respondents went through the “verification” step. From these data, it can be summarised that most of the ITC students seemed to have neglected the first stage of the creative process. Also, it was found that there were only a very few of the ITC and SD students who had gone through the “verification” step.

When designing, a total of 14 (35%) and 23 (57.5) ITC and SD respondents respectively considered the overall concept before the specific details; 9 (22.5%) and 7 (17.5%) ITC and SD respondents respectively considered the specific details before the overall concept; 17 (42.5%) and 10 (25%) ITC and SD respondents respectively considered both at the same time.

Most of the ITC and SD respondents, 36 (90%) and 33 (82.5%) ITC and SD respondents respectively, had positive answers in evaluating their design against requirements after designing.

A total of 29 (82.5%) and 24 (60%) of ITC and SD respondents said that they would use the experience for future designing after designing.

A total of 27 (67.5%) and 35 (32.5%) of ITC respondents answered positive answer for analytical determination during designing. The numbers of respondents from ITC and SD who offered the positive answer in evaluating alternative(s) during designing were quite similar, i.e., 29 (72.5%) and 30 (75%) for the ITC and SD respondents respectively.

7. CONCLUSION AND RECOMMENDATIONS

In this study, the main objectives are to identify the design processes currently deployed by students of the Hong Kong Polytechnic University studying various disciplines of design, and to compare the similarities and differences among them. The statistical data obtained and with the quantitative tools helped recognise the various design processes currently in practice by these design students. Further correlations were carried out with this data. Analysis of the processes revealed differences in the demographic profiles, the analysis stage, the synthesis stage and the evaluation stage between the ITC and SD respondents. In the general design development, 75% of the ITC respondents preferred creativity-oriented design whereas around 50% of the SD respondents preferred the same. The reasons may be due to the differences in the environment or subjects in which they study. The results also suggested that a large number of ITC respondents would determine to end the design process by judgment when compared with that of the SD respondents. Only 5 respondents from ITC did so by time. It means that they will end the design process by the deadline. Thus, it is recommended that ITC students should develop a better time management skill for their design process to prevent frustratingly end due to running out of time. Regarding sources of information, unlike their SD counterparts, ITC respondents tended not to consult experienced persons such as university professors and technicians. Instead, they often used trial-and-error instead. It is recommended that ITC students should take better initiative of soliciting advice from various learnt and experienced parties during their design process. In the process of synthesis, only half of the ITC respondents would base their synthesis on the information collected. Yet, it is generally known that information from literature from various sources does help in developing a solution in a systemic fashion, and should well serve as one of the effect way to facilitate the creative process. For the design process, most of the ITC respondents seemed to have neglected the initial stage of the creative process Result also revealed the “verification” step being rarely attended. Thus, it is recommended that these two stages should be taken on more during a systematic design process towards producing an effective solution against prescribed conditions.

REFERENCES:

Ackoff, R.L. (1970), A Concept of Corporate Planning. John Wiley & Sons, NY.

Hall, A.D. (1962), A Methodology for Systems Engineering. Princeton, Van Nostrand, NY.

Jones, J.C. (1961), The Design Process. Internal Report of AEI Industrial Design Conference.

Jones, J.C. (1970), Design Methods. Wiley: NY

Kneller, G.F. (1965), The Art and Science of Creativity. New York, Holt, Rinehart and Winston.

Lawson, B.R. (1994), Architects are Losing Out in the Professional Divide. The Architects' Journal 199 (16): pp. 13-14

Lawson, B.R. (1994), Design in Mind. Oxford, Butterworth Architecture.

March, L. (1976), The Logic of Design. In March, L. (Ed.) The Architecture of Form. Cambridge University Press.

Markus, T.A. (1969), The role of Building Performance Measurement and Appraisal in Design Method. Design Methods in Architecture. Lund Humphries: London.

Maver, T.W. (1970), Appraisal in the Building Design Process. Emerging Methods in Environmental Design and Planning. Cambridge Mass.: MIT Press.

McCrory, R.J., Wilkinson, W.H. and Frink, D.W. (1963), Synthesis of Concepts in the Design Method, A.S.M.F., Paper No. 63-MD-37

Poincare, H. (1924), Mathematical Creation. Creativity. London, Penguin.

Seiler, J.A. (1967), Systems Analysis in Organizational Behavior. Homewood IL: Irwin.

Voelker-Ferrier, M. and Hall, H. (1993), The Fashion Design Process Step by Step Incorporating Problem

Whitefield, P.R. (1975), Creativity in Industry. Harmondsworth, Penguin.