TEST Engineering & Management

May-June 2020
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Best Practices in Generating Creative Ideas Among Asia Pacific Students

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Article Info
Volume 83
Page Number: 372 - 380
Publication Issue:
May - June 2020

Article History
Article Received*: 11 August 2019*
Revised*: 18 November 2019*
Accepted*: 23 January 2020*
Publication*: 09 May 2020*

Abstract:
Creativity is an in disposable asset for a developing country like our nation Malaysia, even though literature reviews have shown that we still have a lot of work to do on this issue. To make matters worse, Malaysia ranked at the bottom of the Global Creativity Index and Global Creative Class lists. Considering these facts, this work was proposed with the main objective of highlighting the best practices in generating creative ideas during the design process employed by Asia Pacific countries of Japan, Korea and Taiwan. This paper compounded relevant findings from several prior research, direct observations, and recent literature reviews. As an accompaniment to the 12 visual examples of furniture creative design ideas, a Creativity Comparison Analysis based on the four key indexes of the Figural Test, namely Originality, Fluency, Flexibility and Elaboration was provided to describe the comparative and cross-references of these three selected countries. The data collected was then compiled into a study result, followed by a set of recommendations. This paper proposed the adaptation of creativity aspects deemed suitable for Malaysia. It is also hoped that these recommendations will enable higher learning institutions directly involved in the art or design field to upgrade, update, amend or possibly carry out current curriculum restructurings in a bid to remain relevant not only in Malaysia but also in international recognition.

Keywords: *Asia Pacific, creativity, design process, Torrance Tests of Creativity.*

I. INTRODUCTION

Generally, creativity describes the capability or ability of an individual to create, produce and develop new and authentic ideas. Specifically, as proposed by Yong (1994, p. 26), 'creativity' refers to a process that sensitizes an individual to problems, thus encouraging them to find solutions – "a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficult; searching for solutions...".According to a Mission Measurement (2015) report, creativity research has become increasingly popular in the last 15 years. Among the factors contributing to researchers concentrating their focus on creativity is the rise of a breed of workers dubbed as "the creative class". Creative class workers have been described as the main contributors to the economic growth of a country. Approximately 40 million creative class workers are American (one-third of the total workforce) working in fields such as science, engineering, architecture, arts and design, music and even education, and are directly involved in the development of new products or approaches that are novel, beneficial and innovative. In today's global economic scene, creative class workers takes the foremost precedence.

Yong (1993) outlined four types of creativity, which are person, process, product and press. As for creativity test, the Torrance Tests of Creativity (TTCT) is the most employed test across the world. TTCT measures creativity through four key indexes; 1) Originality - the ability to produce extraordinary responses, which are different and unconventional, 2) Fluency - the ability to put forth different ideas or hypothesis as a solution to a problem, 3) Flexibility - the ability to adapt to change, to be unrestricted to

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lazy thinking and to be capable of varying available approaches, and 4) Elaboration - the ability to develop ideas with accompanying details.

II. PROBLEM STATEMENTS

According to research conducted by Adobe Systems Inc. (2017) involving 5,000 respondents from America, the United Kingdom, Germany, France and Japan, 8% of the total respondents believed that creativity was the key to the nation's economic growth. Apart from that, 2/3 of them are persuaded that being a creative person makes an individual valuable to society.

The title of this paper is therefore determined on the basis of the factors discussed above. The insights gleaned by the author from a report on creativity entitled Creativity and Prosperity: The Global Creativity Index by Martin Prosperity Institute (2017) was also the prompting factor for this important title. According to this report, Malaysia ranked the bottom of 1) Global Creativity Index – ranked 48th among the neighboring countries of Asia Pacific (Figure 1), and 2) Global Creativity Class – placed at 40th place compared to other Asian Pacific neighboring countries (Figure 2).

TOTAL RANK	COUNTRY	TECHNOLOGY	TALENT	TOLERANCE	GLOBAL CREATIVITY INDEX
43	Nicaragua	–	69	24	0.474
44	Cyprus	59	43	25	0.463
45	South Africa	45	68	15	0.459
46	Brazil	41	66	22	0.455
47	Chile	48	54	28	0.451
48	Malaysia	54	50	29	0.439
49	Ukraine	34	27	77	0.419
50	India	42	75	30	0.382

Fig. 1.Global Creativity Index

31	Ukraine	31.70
32	Egypt	31.38
33	Taiwan	31.34
34	Spain	30.98
35	Bulgaria	29.07
36	Cyprus	29.00
37	Croatia	28.85
38	Serbia	28.57
39	Macedonia	28.36
40	Malaysia	26.21

Fig. 2.Global Creativity Class

The study of the Martin Prosperity Institute (2017) is similar to the previous results published by Ibrahim (2006). From an educational point of view, the research conducted by the author [refer Ibrahim 2005] identified a distinct shortcoming of Malaysian industrial designers, i.e. the failure to 'function' with creative and original ideas. This is a critical factor, as students applying for admission to the Faculty of the Malaysian Higher Learning Institution had to undergo a stringent selection process. One of the determining factors of success is the creativity and originality of their work. Thus, the author emphasizes on the need to address the creative factor aspects in design swiftly. Creative design should be implemented as best as possible during the teaching and learning process – offered as either a special course, and additional course or an elective course.

III. OBJECTIVES

1. To describe the advantages of creative products (furniture products) designed by Japanese, Korean and Taiwanese students through Product Analysis,
2. Provide in-depth knowledge on the best practices of Japan, Korea and Taiwan in the creative process (design process) based on the Figural Test; and,
3. Propose creative aspects that are appropriate for Malaysian student design adaptation in order to enhance the teaching and learning process in the field of design.

IV. INFORMATION SOURCES

1. The summary of previous researches conducted by the author [refer to Ibrahim et al 2018, Ibrahim 2013, Ibrahim 2006, Ibrahim 2005, Abidin and Ibrahim 2005]. The data were collected via case studies (interview, observation, documents) and questionnaires.
2. Through direct observations during work visits to Japan, Korea and Taiwan. A minimum of two visits was conducted for each country, for the purpose of either presenting paper works; attending conference or workshop; industrial visits, exhibition or university visits or fulfilling invitation from the

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industry or university.

3. The latest literature on the topics discussed, and,
4. The author's personal experience in industrial design study field for more than 3 decades.

V. Information Organisation

1. Stage One: twelve furniture design examples from students; that is four examples each representing Japan, Korea and Taiwan will be presented. A simple evaluation and analysis based on the set criteria will be presented.

2. Stage Two: a comparative analysis of creativity for students from Japan, Korea and Taiwan according to the key indexes of the Figural Test, which is: Originality, Fluency, Flexibility and Elaboration will be presented.

3. Stage Three: creativity aspects practiced by Japan, Korea and Taiwan University students' recommendations that can be adapted by Malaysian design students for the purpose of enhancing the teaching and learning process of design field will be presented.

VI. Stage One: Creative Product Analysis – Furniture Design Project

The main objective of this creative product analysis is to provide early exposure to the advantages of furniture products designed by students from Japan, Korea and Taiwan. Then, it will be linked to the Creative Process Analysis – Figural Test in Stage Two. It is expected that the combination of these two stages would complete the process of product design – from the development of the concept idea to the creation of the real product. Consequently, how both are complementary and what are the good practices employed in Japan, Korea and Taiwan all this while can be observed deeply.

A total of twelve (12) furniture designs by students from Japan, Korea and Taiwan were randomly selected for the furniture product analysis. Most of these furniture products have been curate during university exhibitions, exhibition participations or competitions. Each country is represented by four (4) furniture design examples – most of which are chairs made of natural materials (e.g. wood).

Among the reasons why furniture products have been chosen over other items is it is fairly easy to compare, since the normal work produced by students are prototypes made of full-scale real material. To evaluate the furniture products, the author have employed four of the eight criteria proposed by Ibrahim (2013), which are ; 1) Visual Appearance – the external form and shape of furniture design, including structure and frame that made up the design of each furniture piece, 2) Aesthetics – beautiful material, charming colors and exceptional appearance such as soft surface, accurate comparison rate, dynamics, simplicity, detailing and such, 3) Telesis – did the form, decoration and material depicts certain culture or time?, and 4) Innovation – are the design new, with minor innovation and has its own characteristics?

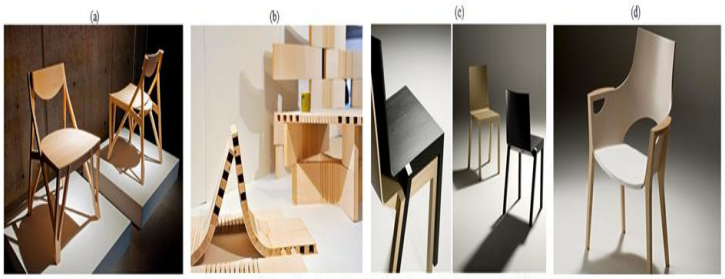

Fig. 3. Furniture Design Examples from Japanese Students
[a) Oikawa Yasushi, Musashino Art University; b) Maruyama Kanako, Musashino Art University; c) Toshihiro Kawada, Musashino Art University (Horn Chair); d) Yoshimitsu Asakura (Peace).]

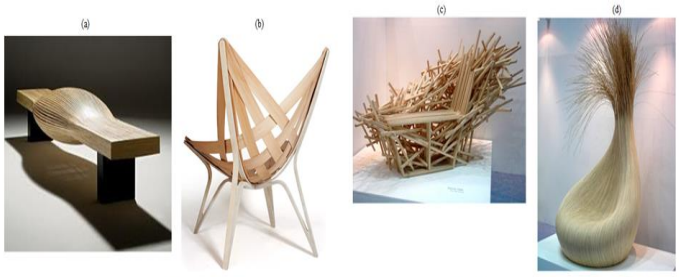

Fig. 4. Furniture Design Examples from Korean Students
[a) Sehwa Bae, Hongik University (Meditation); b) Sam Woong Lee Hongik University (Star Series); c) Choi Min Young, Hongik University (Stereo Type); d) No Name, Hongik University]

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Fig. 5.Furniture Design Examples from Taiwan Students
[a) Yin Tzu-Chi, National Taipei University (Sheep Chair); b) Yu-Ying Wu, Tatung University (Tofu Chair);
c) Chia-Hung Hsu, National Taiwan University (Easy Chair); d) Chishen Chiu, National Taiwan University (Flexible Love)]

Creative Product Analysis Outcome

Based on the four criteria discussed above, the following is a brief analysis by the author on the furniture's designed by students from Japan, Korea and Taiwan. Considering limited writing space, each criteria was summarized to include all three countries – Japan, Korea and Taiwan.

Visual Appearance - Appreciating the student's design work is exciting and engaging. It comes as no surprise since the visual appearance manifested by the form, image, structure and frame were unique and can stand on its own. These characteristics can be seen on furnitures created by students from Japan (a) and (d), Korea (b) and Taiwan (c). We can distinctively see how the designs were influenced by the dynamics of form and appearance such as repetition, line, contrast and colors that are closely linked to local cultures of their countries. In addition, the simplicity of the design is reflected through the economical use of form, so direct and yet leaving a profound impression on the viewer. Despite originating from three different countries, their designs were centered on the same value – proving their similar root! – while presenting a form and appearance that appeared to be on the same axis.

Aesthetics - Whether deliberate or not, all designs by the students clearly emphasizes on simplicity, superiority and perfect comparison rate, with the selection of material and finishing's prioritizing on beautiful colors pleasing to watch that is coupled with fine detail. As an example, let us take a look at a Taiwan student's creation called sheep chair, whose main seat fabric was created with a blend of towel material. The surface material is maintained to exhibit characteristics of softness, comfortable to sit upon and alluring to look at. That said, all twelve students were found to apply the simplex design concept (simple and excellent) or incorporating simplex design in their work. As mentioned before, simplicity served as the main basis for all student designs. Simplicity accorded great impact to a design, as the saying goes "less is more" and "more is less". Simplicity of design promises a modern, light and outstanding look of a product that enables its appreciation effortlessly. Based on these aesthetics, their designs are majestic, great to gaze upon, arresting, beautiful and elegant. Simplicity without alienating aesthetics can be seen in furniture's from Japan (c) and (d), Korea (a) and (b) and Taiwan (c).

Telesis - The design of all these furniture's are testament to the design students' earnestness, scrupulousness and sensitivity towards furniture product design Telesis. It is not quite wrong to liken this to a bridge that have successfully connected two semantic design concepts, namely cultural semantic that prioritize cultural value and a race's background from the angles of history, faith and local customs and functionalism semantic that involved designs emphasizing on function and use of a product apart from its outer form. The meeting and combination of these two concepts resulted in furniture design that is not only practical but also functional without denying the aspects of culture and customs of their people. We can see this depicted clearly in the Taiwan (b) furniture that was inspired from tofu, a local food of the country. This highlighted the student's sensitivity towards their culture and custom without leaving out the functioning aspect of the furniture.

Innovation - In this study, innovation became the deciding factor of furniture design. The designs presented reflected the inspirations, forms and images of today's art meticulously blended in the production. With these features, the designs created were acknowledged as the best and most importantly, far special compared to others. This is evident in how Korean students (c) and (d) manipulated forms and images to be so futuristic that

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it resulted in something that is not the product of your usual run of the mill thoughts. Both of these furniture products sported advanced features on all aspects, are something new and extraordinary and is in a class of its own. It is not too much to suggest that this contemporary furniture design has successfully integrated two important elements in its design, the 'high-art product' and the 'high-tech product'. This is clearly illustrated by the fact that the design has strong artistic and aesthetic qualities, as well as the use of materials, finishing's and variations that are seen as high-tech products. All students were also found to be highly knowledgeable and are able to make use of key materials and finishes that not only preserve their nature, but also managed to support high-tech images in their designs.

VII. STAGE TWO: CREATIVE PROCESS – FIGURAL TEST ANALYSIS

The analysis of creative process through figural testing is based on findings from previous research by the author [refer Ibrahim 2006]. In the research conducted to identify the creativity of these Asia Pacific students, the author has applied full case study approach. Case studies have been applied based on Patton's recommendation (1987) and in addition, its can also help researchers to recognize inconsistencies or unique variations in the level of creativity of student work, which is the true focus of the study. This research have applied multiple case studies using evidence gathered from three prime sources, which are 1) documents, 2) interviews, and 3) direct observation.

For creative process analysis, two types of creativity tests can be adapted from Torrance Tests of Creativity (TTCT) which are 1) Figural Test for identifying figural creativity and 2) Verbal Test for testing verbal creativity. Since the main objective of this research was to describe student's work (project) creativity, TTCT via Figural Test was deemed as the most suitable for adaption compared to Verbal Test

VIII. Analysis and Results

The analysis of case study result uncovered several crucial findings pertaining to the creativity of students from Japan, Korea and Taiwan. For the purpose of simplifying descriptive data explanation, the author afforded special focus to items listed under the four key indexes of Figural Test, which are Originality, Fluency, Flexibility and Elaboration.

IX. Japan Figural Test Result

Originality - Most students are able to come up with ideas that are different, extraordinary and unique compared to other groups. A majority of the ideas were beyond expectation. However, almost all students failed to interpret sketches in their own style. They are much more comfortable and were observed as more skilled in drawing square shapes rather than aerodynamic shapes. Nearly all of them are still bounded to their own style and identity while still in the search of individual identity in sketching.

Fluency - As they come from a developed and modern country, most students are open minded, quick to think, and have a relatively high and satisfactory imagination. They also appear to be able to rapidly come up with various ideas but are not confident in explaining/elaborating each of the presented idea. In terms of the ability to generate a large amount of ideas, their performance was impressive. The average number of sketches presented ranged from 20-25 pieces. The least amount of sketches were 14 pieces and the most was 26 pieces.

Flexibility - Most of the students were able to diversify the idea generating approaches. Approximately 5-6 approaches were tested to guarantee good proposal ideas were presented. Besides, they were found to be taught to adapt to any changes. However, they are still unable to make use of many strategies in order to generate a lot more and innovative ideas. Much of the time were spent on brainstorming and group discussion, with inadequate time allocation for developing strategies employable by their group.

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Elaboration - Overall, the students were able to develop an idea to a higher level. However, those ideas were unorganized with some of them jumping. That said, their ideas were in-depth in nature and detailing was given an emphasis. The sketches produced were also much stressed on technical aspects and production process.

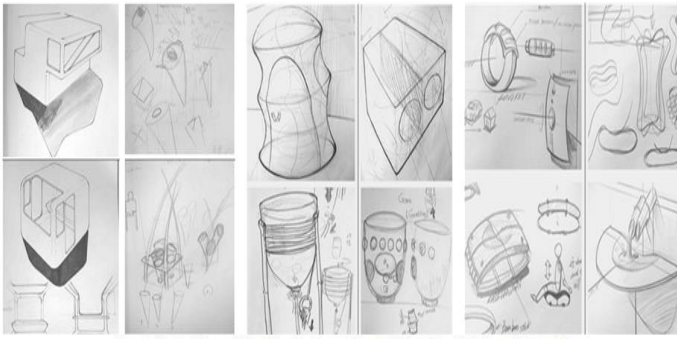

Fig. 6. Japan Figural TestFig. 7. Korea Figural Test Fig. 8.Taiwan Figural Test

X. Korea Figural Test Result

Originality - The majority of the students could produce ideas that were different, extraordinary, unique, organized and satisfactory. They were capable of interpreting sketches in their own unique style. As for the aspect of personal identity in drawing/sketching, only a few were satisfactory. However, overall performance was good and satisfactory.

Fluency - Most students exhibit an open mindness with high imagination and speed in generating various idea concepts. The idea concepts presented were fast, instant and convincing. On average, the students could come out with high amount of ideas and were satisfactory. A student averaged approximately 20-30 quality sketches. The least amount of sketches was 18 pieces and the most was 34 sketches.

Flexibility - On average, the students were capable of varying the approaches when generating ideas. An average of 4-5 proposals was presented by a student and this is a satisfactory performance. Apart from that, they can adapt to any changes as best as they could. However, most students failed to apply any strategy in enhancing their flexibility with regard to creativity aspect. This has affected a bit on their overall design process.

Elaboration - The majority of the students could and are capable of to develop ideas to a higher level. However, there are still those who are bounded to original ideas and were unable to develop their idea to the next level. Nonetheless, almost all of the students produce in-depth ideas and prioritize details. The emphasize put on details can be seen in their ideas and concept sketches.

XI. Taiwan Figural Test Result

Originality - Almost all students from this group of students exhibit ideas that are different, extraordinary and unique and was the most satisfactory of them all. Most ideas proposed by them were outside of the box. These students could interpret sketches in their individual styles, were amazing and with high quality. Almost all of them possess individual identity in drawing. Each student was observed to have individual identity that is different from their peers.

Fluency - Most students in this group exhibit an open mind that is fast and high in imagination. They compete with each other to generate multiple idea concepts fast and with high enthusiasm. The most apparent is their ability to generate high amount of ideas. The most number of ideas presented was 43 sketches with the least at 12. An average of ideas presented by a student was 25-30 sketches – which was an encouraging number indeed.

Flexibility - A multitude of approaches was applied to generate ideas. The proposed idea presented was more than enough, ranging from 4-5 proposals. Nearly all students were trained to adapt to any changes and this situation is deemed as favorable. However, they are still lacking in the aspect of utilizing strategies to ensure the ideas generated are high in quality.

Elaboration - Most students are capable of expanding ideas to a higher level. However, since it was observed that emphasize was put more on styling rather than technical aspects, the index is concluded as adequately satisfactory. The students of

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the group also did not put much stress on in-depth ideas. This inevitably resulted in the lack of detailing in the ideas presented. Most ideas presented were observed to be laid back and tends to focus more on the external aesthetics.

XII. STAGE THREE: RESULTS AND GOOD PRACTICES SUMMARY

Creative Product Analysis

1. Visual Appearance: The visual appearance manifested via form, outlook, structure and frame of the furniture were unique. The designs were dynamic and simple, achieved through an economical use of shapes.

2. Aesthetics: Spectacular with the use of perfect comparison rate. Accurate material and finishing choice. With emphasize on simplex design concept and "less is more" that promises a design prominent in beauty, a treat to the eyes and elegant.

3. Telesis: Students are sensitive towards the furniture product Telesis and placed an importance on their society's cultural value and background. Furniture design was practical and functional, without sacrificing the aspects of culture and their society's customs.

4. Innovation: Showcasing latest art images and was the best among the rest of the countries. Their design featured high art and aesthetical values that also highlighted high tech image.

Figural Test

1. Originality Index: verified that Taiwanese students were really capable of generating ideas that are different, extraordinary and unique. They excel in interpreting sketches with individual styles in addition to possessing individual identity in drawing and sketching.

2. Fluency Index: verified that Taiwanese students are open minded, swift and have a high level of imagination. Through this type of thinking, they rapidly produce a multitude of idea concepts while at the same time generating an abundance of ideas.

3. Flexibility Index: the students from Japan and Taiwan were observed to be capable of varying idea generating approaches. In addition, they are able to adapt to any changes while employing various strategies in creating high quality sketches.

4. Elaboration Index: verified that students from Korea and Japan are able to develop their ideas to a higher level. They were also observed to produce in-depth ideas and put more emphasis on details in their sketches.

XIII. SUGGESTIONS

In order to achieve the third objective of this work the following recommendations are proposed and should be taken into consideration by higher learning institutions offering programs/courses in this field. All recommendations are the result of case study research conducted by the author pertaining to student creativity in the three countries done through direct observation during work visits to the countries.

High Quality Sketch Creation Method - Setting the requirement of at least 10-20 high quality sketches for each stage as practiced by Japan and Korea is a best practice that warrants appropriate consideration. Through this method, students will be given free reign to choose and apply any medium deemed suitable and effective for their sketches. As for evaluating the best sketch, the author have identified that the best method will be an evaluation of stroke energy, color application to the drawn object and its sequence of drawing, which is from concept, idea, development and design selection.

Ensuring Student Achievement in Design Process - Apart from critique session, discussion, meetings and discussions, best practice through the implementation of project schedule for each student is also a good method to be considered. Through this approach, the students are required to maintain their own project schedule and will be monitored in order to ensure the students being on the right track. In addition, lecturers will be able to ascertain whether the students under their responsibility have achieve the requirement and needs set at each of the design process with more ease and effectiveness.

Closing the Gaps between Less Creative Students

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and Creative Students - The method employed by Korea is intensive sketching exercise with the aim to generate high quality sketches in large amount is one method that can be implemented right away. Other approach that could be considered is setting working in a group or group work. Through this method, several excellent students are mixed with their weaker counterparts to form a working group. The examination and monitoring of less creative students will be maintained and done as frequent as possible.

Enhancing Student Creativity Strategy - The best approach that can be applied is through the production of mock-up or rough model, which is an ongoing practice for Japan. The same is for the copy and learn from books or design magazines method in order to nurture professional standard in students, as implemented by Taiwan. Through these methods, Japan and Taiwan are confident that their students' creativity level will improve daily.

Application of Manual Method in Sketching Process - It is highly recommended for manual method to be applied fully in the process of teaching and learning in order to enhance student creativity level. An example of this matter can be seen in Taiwan, where they did not permit students to employ computers during ideation process in fear of weakening the student's idea and creativity. Taiwan's success through the implementation of this method is clear for all to see. They were also smart in interpreting sketches with their very own style in addition to possessing individual identity in drawing and sketching.

XIV. CLOSING REMARKS

The author believes that the recommendations presented here are worthy of considerations by stakeholders especially higher learning institutions that are directly involved in offering programs in new product design. It is also hoped that these recommendations will enable higher learning institutions directly involved in the drawing or design field to upgrade, update, amend or possibly carry out current curriculum restructurings in a bid to remain relevant not only in Malaysia but also in international recognition. Lastly, it is also anticipated that the results presented in this paper will enable Malaysia to rank among the top 20 best countries in the Global Creativity Index and Global Creativity Class in line with other Asia-Pacific countries such as Taiwan, Hong Kong, Japan and Korea.

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