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## VISUAL DIARY AS A TOOL FOR IDEA GENERATION FOR GRAPHIC DESIGN STUDY PROGRAM

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### ABSTRACT

This study is to explore visual diary as a tool that allows students to express their multiple creative views and their abilities in generating ideas. This tool has been integrated as part of the selected students' assignments and projects as a practice in the creative arts education. Many of them were taught to sketch, doodle and experiment in different drawing techniques. Nonetheless, many of them are facing the problem of lack of knowledge and understanding in the ideation process. A total of 35 visual diaries were selected, one each from a pool of 35 students in the graphic design program. The samples in this study were 35 ( $N=35$ ) students who were enrolled to pursue the visual communication module in the first year of the graphic design program. The research was conducted at the researcher's university, being a private institution located in Kuala Lumpur. The main tool for data collection was an assessment rubric, namely, the Ideo assessment. The quantitative data from the IDEO assessment was analyzed using descriptive statistics. From the findings, it can be concluded that through the visual diary, students have shown greater understanding in the design process and that continued efforts should be made to improve, develop, and explore ideas in using the visual diary as an instructional tool for the students' assignments and projects.

**Keywords:** Diary, Idea generation, Visual, Design thinking and Visual literacy

### DESCRIPTION

Most programs in art and design education are taught to draw, doodle and sketching in different drawing techniques the class. Thus, Visual diary, also known as visual art diary, or art journal has historically been developed and practiced by many artists and designers. This tool has been integrated as part of the selected students' assignments and projects as a practice in the creative arts education. Nevertheless, there is a lack of information, explanation and practice for students of the creative arts faculty, such as, graphic design, multimedia design, fashion design and also other faculties such as, interior, building, and product design, to perceived the importance of the process of ideation, in the involvement of the design activities during the design problem –solving process.

The practice of visual diary is widely used in the secondary school art program and art studies for the art subject in high school. Admittedly, at the tertiary level in many creative arts and design program too has begun to encourage students to practice using a visual diary as a tool to develop the ideas and ideation process. For recent study, visual journaling has also been practiced and applied in many faculties and not only in the art and design course. It has been practiced and adapted in the field of psychology, as one of the vital methods to use in art therapy. It is claimed that this practice has helped many people to be overwhelmed by the artistic drawing, and by documenting the everyday art and design practices through the visual diary, which is a way to communicate their inner feelings and

thoughts. Consequently, as Wolfe (2011) mentioned, visual diary can be used as a suitable resource for classroom and realistic success in the laboratory. Students should practice it as an important role in the classroom, improving critical thinking about procedures and actions to generate an in-depth knowledge and deep-thinking experiences.

A seven weeks assignment of visual diary was offered to first year students of the imaginative expressions program in visual depiction. This task encourages students to investigate drawing as a work of art and also to generate ideas. The practical ideas of this task are seeing, considering, and creating ideas at an early level. In view of perception and experience of this present reality, ideation is an important process in demonstrating different illustration topics. The topic of illustrations would require thinking about line, frame and space, esteem, observation, center, deception, and the expressive, passionate parts of illustration. The students took part in illustration practices and completed them in class and as homework. The final results of the course is an expansive sketchbook; in this situation this sketchbook will be the visual diary. All illustration practices, composition and completed illustrations and fine arts will be created in this visual diary. The prominence of this tool was highlighted to enhance student-learning experience, positively impacting creative thinking and to explore the design process in the private learning higher education in Klang Valley.

## **STUDY BACKGROUND**

### **Visual Diary**

Visual diary is often link to the act of recording down ideas in anyway and not limited to any subjects and themes. It is often making connection to our creativity. As pointed out by Dorst and Cross (2001), creativity is often distinguished by the occurrence of an important event, i.e. the so-called creative leap. Sometimes this event happens as a sudden insight that the designer distinguishes instantly as important. However, sometimes the designer (or an observer of the design process) is not able to determine or point out the happening of a design process, or the moment when the key concept begins to emerge. Deep thoughts and creative outcome descriptions of creative events made by the designers are sometimes, not dependable. Therefore, designers and students can use a visual diary to record their thoughts, ideas and generate multiple ways to view their subject matters, to make connection to the creative design process. This research attempts to investigate the use of visual diary as a tool to help creative practitioners and students to generate and develop ideas.

As Springgay, Irwin, Leggo and Gouzouasis (2008), have pointed out that the visual diary may also help students assess a moment, experience, feeling or idea, by combining designs with images to learn to evaluate an event, experiment, a sense or an idea. Through this stage, learners can explore, experiment with their thinking and emotions by accumulating different ideas and ramifying their minds (as cited by Scott, 2010). Scott noted that visual diary practice has been widely used as students' assignments and various subjects in schools and many creative and art programs, including art therapy subjects in psychology programs. However, it appears that students have not been taught, how to generate ideas and have a better understanding in the method of generating ideas in the design process. Therefore, there is a need to emphasize on the idea generation process, where students are encouraged to learn in different ways to create and generate thoughts. This tool can be regarded as a practical instrument to create more opportunities for students to explore methods to collect fresh thoughts.

### **The Early Visual Diary Practice**

A diary has been used for practicing drawings and making art for a relatively long period of time. The earliest form of visual diary was known as a visual art diary, although throughout the long span of history many artists and designers have created and practiced and drawn art journals. The early form of visual diary can be traced to the sketches and drawings of famous great masters, such as Leonardo Da Vinci, Michael Angelo and others. Artists and designers, used visual diary mainly to record down their journey of making the art process or sometimes, it is to list down step by step of

the engagement of making an art piece. In a visual diary they are able to experiment and express their thoughts and feelings through their imaginations.

In particular, Leonardo Da Vinci, one of the greatest art master of the 14<sup>th</sup> Century Renaissance era, used visual diaries to generate ideas and to record his reflections, through his drawings and sketches. According to Scott (2010), it was found that Da Vinci's diary has around seven thousand pages, containing perceptions and considerations of scientists that he venerated, individual reflection on life structures, water, illustrations, herbal science, topography, works of art and more. Da Vinci's diaries, involves himself as, *inter-alia*, a researcher, naturalist, designer, craftsman, as can be discerned, from the record of his ideas based on his naturalistic thinking and concepts. The great master has certainly had vast topics and drawing themes in his visual diary. Often his sketches and drawings are accompanied by his semantic habit that is evident from his diaries.

As Trueit (1995) said, the word "diary" is taken out from the French word *day*, which stands for "the day," whereas the English word *diary* is a subsidiary of "late diurnal," which means "every day." In this way, a diary is a composed portrait of the day and combined the roots and consequences of these root words. In this modern day and age, the cutting-edge diaries, although similar to the more customary composed record of a day, have advanced into a more extensive and progressively inventive endeavor. The practice of recording diaries has progressed towards becoming just a day by day process into a chronicle for life. Diaries go from composed depictions of exercises, documentations of enthusiastic battles, and discussed among self and the world, to transcriptions of movement encounters (as cited by Scott, 2010)

Scott (2010), also asserted, that there are always some occasions, events or thoughts to be expressed in one's life. Everyday there may be some interesting or incredible or as little as very ordinary daily stories. Visual diary, likened to a journaling process will have permitted the author to list, document, assess, explore and express ideas on his or her life. Hence, it is the process of listing, recording, evaluating, examining and expressing one's thoughts on one's live. Whether Da Vinci was thinking about his next exceptional thoughts for his painting and drawing, or any invention of a genius, such as Edison, records of their diaries have led to many historical facts, revealing how the excellent masters have worked in the past. Visual journal is effectively, the platform for documenting and reflection. Thousands of years ago people have devoted themselves to journaling throughout the globe and tales of their achievements and endeavors were found. Although questions for the historians could not be addressed right now, their visual journaling have however, provided many people with an in-depth view and insights that could be used as a potential guide for others.

### **The Development of Diary Practice**

Visual journaling or diary is relevant in various aspects of life, involving, our culture, our environment, society, our profile as well as our social development circle. In a nutshell, Todd-Adekanye (2017) in her studies summarized that, these visual journals offer great helped to students, designers, and artists to list down their ideas and to resolve issues. In addition, the diary process is very personal and if executed well, it may lead one towards a better understanding of ourselves better. Many great scientists and artists had practice dairy making. For instance, Da Vinci's journals are full of visuals, images, drawings and notes and writings where he lists down his thoughts and comments or facts about the subjects he studied. Scott also (2010) stated that, the journal of Lewis and Clarks have survived to this day and still referenced in historical writings. Thomas Edison, the great inventor, who was very much similar to Da Vinci, had always listed down and recorded his thoughts and the formations of his inventions into drawings. One of his most interesting and inspiring idea was the light bulb, where he had produced many drawings depicting the idea of a type of device that shows the functions of recording. This device also showed an indication of playing back the message. Today this great idea has successfully channeled into the progression and creation of an answering machine.

Visual diary or dairying, is an imaginative path for designers to share their encounters and individual reactions to life's occasions in visual and composed frame. Through choosing and orchestrating content and pictures, students can expand their comprehension of craftsmanship, improve the appearance of their ideas and give uplifted basic reactions to visual culture. It likewise

urges designer to know themselves on a more profound dimension, considering individual qualities and difficulties, qualities and concerns, and wants and dreams for the future (Cummings, 2011).

As Bernabei characterized (2010), the visual diary is broadly utilized all through the planned procedure by experts, instructors and students. It is effectively a body to encourage accumulation, recording and impression of ideas, information and plan. Thus, the visual diary is a built-up appraisal practice in planned training. The customary type of training in visual diary and visual reasoning today is to maintain a visual diary in a sketchbook. Lupton (2012) contended that, this is a procedure of catching ideas as little illustrations every day, as portrayed in his book, *Graphical Design Thinking: Beyond Brainstorming*. Henceforth, there is a need to work on making visual diary by experimentation with materials and procedures.

## **Design Process**

From a review of Lupton & Phillips's book on *Graphic design thinking: How to define problems*, the authors discovered, that most design projects begin with an issue such as product improvement, logo creation, or illustration of a concept. At the beginning, designers and customers often believe too closely about issues, restricting the outcome's achievement by restricting their perspective of the scenario. For instance, a customer who claims to need a fresh brochure could do better with a website, promotional event, or marketing plan. The author explained that, if there is a developer who believes the customer requires a fresh logotype may discover a visual icon or a fresh name to function better for a worldwide crowd. There is a need to search for greener packaging that could produce fresh manufacturing and distribution technologies as well as individual products. The author's ideas are cheap and abundant at the beginning of the design process, pumped out in abundance and tossed around with abandonment. Later, when many concepts are reduced to those most likely to succeed, visualizing and testing each one will take time and money. Consequently, designers often start with a period of open-ended, playful research. It is a method that involves lists of writings as well as pictures of sketches. It includes mapping familiar territory and mapping unknown territory.

For this study, we are perceiving the techniques that developers use at the early stages of the creative process to identify (and question) the issue. Some techniques, such as brainstorming, assist developers to produce key ideas, while others, such as interviews, focus groups, and brand maps, try to illuminate the issue by wondering what consumers want or what has been achieved before. Many of these methods could take place at any stage of the process, such as brainstorming. Brainstorming is the first step in the phase of many designers, and it is the mother of many other thought devices, so we put it at the top, to determine the methods to be used, whether informal or coordinated, or acceptable at all? Can one just sit down, and be a creative person?

Most thinking methods include outsourcing of thoughts, so that they can be viewed and contrasted, sorted and paired, graded and shared. Thinking does not just occur within the brain. It happens as fleeting thoughts become things that are tangible: words, drawings, prototypes, and suggestions. Thinking occurs more and more among organizations in working towards common objectives (Lupton & Phillips, 2008).

## IDEO Design Thinking Model



*Figure 1.* A Model based on IDEO Design Thinking.

IDEO is a worldwide structure firm, underlines Human Focused Design (Human Centered Design) to encourage open associations and utilizing design thinking techniques. IDEO is a worldwide structure firm, situated in Palo Alto California, United States. The firm was established in 1991 utilizing design thinking techniques to structure items, administration, condition and advanced understanding (Bloomberg Businessweek, 2011). This firm underlines Human Focused Design (Human Centered Design) to encourage open associations and the private segment which enhances the said administration is developing and aggressive. Tim Brown (1999) portrays design thinking as a procedure relationship and comprehension of human needs from top to bottom. This procedure is viewed as an exhaustive procedure in tackling structure issues, administrations and conditions over critical thinking works in every aspect. Design thinking relies upon the capacity of people to be instinctive to perceive designs, important ideas and to express the person's self-articulation, apart from words and images. The procedure of design believing is depicted as a space framework covering, and as opposed to requesting the systematic advances.

There are primarily three spaces:

- i. Motivation - Inspiration is an issue or opportunity that drives business searching for arrangements.
- ii. Idea Generation - Idea age is the way towards producing, building and testing ideas.
- iii. Usage - Implementation is the way from venture to life of numerous individuals.

In this context, IDEO uses two conventional research devices and systems to enable customers to see how their new or existing tasks will be in the future. The IDEO technique includes, as protected innovation, a model of action plan, perception of information, advancement techniques, hierarchical structure, subjective and quantitative research.

## **The Visual Influence**

In Marzano 's research, Pickering & Pollock (as cited in Scott, 2010) argues that, like journaling, the visual representation concept has proved to be useful to pupils. However, contrary to journaling, the benefits of visual representations were explored in direct relation to the student achievement. Psychologists developed a theory of how humans retain knowledge in the 1960s, when the practice of journaling was studied in the United States. The theory suggests the brain, language-based data and picture-based data are processed in two ways. This theory is also called dual coding. This form of language method for storing data is to store 14 data in the formatting phrase style.

The brain gets orally or in writing and shops it in a comparable format. This reflects the storytelling newspaper. In comparison, the brain reacts to visual or physical stimuli in the visual way of information storage. In the context of the occurrence, the brain stores the data as a related picture or feeling. Findings indicate constantly that the bulk of data submitted at college is received by the pupil in language mode. Scott (2010) also emphasized, students, while strongly influenced by the visual, are more often engaged in verbal and written form. It has been shown that the active participation of students in the development of non-linguistic representations activates and increases brain activity. Although the visual journal appeals to novices by integrating writing into the common linguistic roles, it also encourages them to use their visual way of thinking visually

## **Classify content of Visual diary**

A few visual diary examples chosen from the samples of this research have been categorized according to the visual diary material of the students. From Bernabei's (2010) study, the writer collected and recommended that students use the visual diary for the following reasons: collection of images / text / for inspiration, brainstorming of ideas – both individually and with others, personal reflection and problem analysis, validation of ideas and concepts, detailing and developing ideas through sketching, documenting and refining of technical aspects for, understanding and refining personal style, collation of market trends and styles.

## **Visual Art Elements used in Visual Diary**

In the Creative area, components of the visual diary are widely studied and shared among artists, designers and fashioners. It is usually taught by first-year program students in art schools and colleges who follow the creative arts course, such as graphic design, fashion design, interior design, digital design, and industrial design. The components of the visual diary can be varied from three main sections. Namely the content of diary, the subject matters which refers to a theme, topic or an idea and the visual art elements used in the diary to record and to draw out their idea or specific topic. Thus, the artist and designer are knowledgeable about the visual elements for the design, drawing and painting.

## **Summary : The IDEO Assessment, new method of finding ideas**

There is still a lot to be learnt about the practice of using the visual diary as a teaching instrument that encourages students to exercise it and use it as a tool to explore an effective art and design assignment and school activities. In general, the literature review has shown that there is a positive connection between the use of visual diaries and the enhancement of critical thinking as well as the practice of in-depth learning, and that it can be perceived as an excellent tool for academic evaluation in helping students in the process of generating ideas. The practice of documenting a visual diary will have a positive impact towards the student's creative process and their academic achievements. However, this mode of teaching may be more effective in specific populations. To narrow the research gap on the absence of comprehension in creative ideas, a few theories have been listed and established to reinforce design thinking skills, ideation processes, and new knowledge gained, that has been adapted as an IDEO assessment through a study of new methods of finding ideas.

## **THE IMPORTANCE OF THIS STUDY**

Based on the results obtained in this study, it appears that usage of visual diary as a tool for idea generation does have an impact on students pursuing the foundation year of the graphic design program. The visual diary enables them to gain a better understanding of the development and experimental process in generating ideas in their classroom assignments and projects.

On the other hand, an IDEO Assessment model was developed for the purpose of measuring students' achievement in their assignments and projects for academic achievement. The results revealed that, through adapting this IDEO assessment model, the visual diary has a significant impact on the student's cognitive learning strategies and are efficient tools to help the learners with issues of generating ideas. Lastly, it is evident that the presence of this comprehensive IDEO assessment model, has a positive impact on the students' academic achievement. This model also plays a significant role in providing support to students to assist them in generating and developing multiple ideas.

### **The overall grading in student's academic achievement.**

Table 1: *Grade and Percentage obtained by students 'in visual diary assignment'.*

<b>Grade</b>	<b>Percentage (%)</b>
A	11.4%
A-	5.7%
B+	22.9%
B	25.7%
B-	17.4%
C+	8.6%
C	8.6%
F	0%

As illustrated in Table 1, demonstrates the overall grading in student's academic achievement. The descriptive statistics presented the distribution of students' scores in the assessment of their grades and percentages obtained in their visual diary assignment. The distribution is observed on the basis of percentage of students' getting grades from grade A (Excellent) to grade F (Fail). From a total of 35 students, only 11.4% scored grade A, 17.4% scored B-, and most students achieved grades B with the greatest percentage of 22.9%, 5.7% scored A- and 8.6% were students with grade C+ and C. None of the students were assessed in the category of grade F.

In this study, there is a significant difference of mean scores, standard deviation and percentages in terms of the student's achievement based on the IDEO assessment model, together with five dimensions that were analyzed using descriptive statistics. This study leads the conclusion that the 35 students who were examined showed the developmental progress anticipated in their performance exams. The outcome endorsed the developmental level, although there were individual variations. Students obviously have shown that their knowledge and cognitive characteristics for greater cognitive skills are increased adequately. A notable result of studio job and artistic output was the result of this academic achievement.

From the research evidence gathered, it was revealed that due to their prior knowledge, skills and experience gained through the visual diary assignment, the students' good grading indicated their ability to understand a work of art was achieved. The existence of this fundamental assignment, in this tertiary level of creative arts program significantly impact the students' achievement and academic grading in their course works and assignments. Eisner (1998a, 1998b) argues that students who have learned through art and design experience may gain more benefits and good learning characteristics in other educational areas. Majority of the students scored well and have the most scoring in grade B, followed by grade B+, and B-. This academic achievement indicates that students generally have fair and average knowledge and understanding to perform

their abilities in their assignments. There is a small percentage of student who scored grade C+ and C in this assignment.

This reflects that this group of students may lack knowledge and understanding in the process of completing the assignment. These students would need to try and find new methods to improve their grades. They may improve through better creativity. Creativity has many elements. Aurum & Gardiner (2013), advocate that creativity is essential to the ability to generate ideas. Some psychologists and philosophers (returning to Aristotle and Plato) claimed that association could explain the development of concepts. In addition, many of these scientists have claimed that thinking involves moving from idea to concept through an unimaginable chain of association and thought. Tomas (1999) also pointed out creativity as an original idea. Steinberger (1999) claims that all have some creativity, but the creativity is discouraged by culture and executives. In terms of intelligence, understanding, thinking styles, personality, motivation and environmental context, Steinberger points out that there are six vital aspects of creativity (as cited in Aurum, & Gardiner, 2013).

Gardner (1973/1990) and Eisner (1981, 1982), on the other hand, expressed that cognitive elements will improve the creative expression and reaction of learners. By trying to generate fresh thoughts and experimenting, this will assist them to develop their critical thinking skills and foster creative problem-solving skills. By doing so, they are attempting to solve issues with new methods and become innovative. Most of them were able to produce thoughts with creative problem-solving capabilities ranging from informal to more complicated. They were also versatile in generating diverse categories and opinions for the same problem with a variety of ideas. They worked out their ideas well by adding, exaggerating, or building on their idea. Most of the students' ideas were original, fresh, distinctive, unusual, new and distinct when producing their studio art production.

Students began to explore various topic to draw, doodle, sketch, scamp and color in the diary activities. Many questions and examples were raised at the preliminary stage to discuss various topics and subject matters for inclusion in the diary, as most of the students, at the early stage of this project, were not certain what to put down in the diary, or how to create a visual diary. It is a non-directional, experimental and a pilot stage for students to discover early design process, to set up a design brief for them to generate topics, drawing medium and drawing style in the diary. The progress of visual diary as an instrument involves divergent thinking skills of the students. This group of students have also been able to develop multiple thoughts in the design process.

As acknowledged by Coleman (2015), in the academic context, the design process is also a structure tailored to accommodate the contextual and educational demands and realities of the academic setting while attempting to capture and simulate professional design practices. Hence, a model should be used to explain the link between the thinking abilities that work in the development of all types of design process knowledge and the role that these abilities plays in the academic achievement of the students.

### **The Mean score achieved by students in visual diary assessment**

Table 2: *Mean score achieved by students in visual diary assessment.*

<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
35	44.00	87.00	66.5	9.8

As illustrated in Table 2 demonstrates the Mean score achieved by students in visual diary assessment. The descriptive statistics presented the distribution of students' scores in their assessment on the mean score and percentage for visual diary assignment based on the five dimensions of IDEO model. Based on the score of 100, the mean score of student's level of knowledge is 66.5. This indicates

that by general standards of the university score, the students' acquisition of knowledge in idea generation is good. Average scoring falls within grade B-, even though, it is not a superior score, students are generally knowledgeable about generating and developing ideas. Nonetheless, the big range between the highest score of 87 and the lowest scores of 44 seems to indicate that students' ability is quite varied. Meanwhile, the mean score achieved by students is 66.5 and the standard of deviation is (SD=9.8).

Based on the results in this study, it leads to the conclusion that students have significantly shown a better understanding towards the design process. Through the five dimensions of the IDEO model, the quality of students' development in the following areas have improved: idea communication, visual perception and artistic response, research in drawing skills, knowledge of form and subjects, design engagement process, and their critical and aesthetic inquiry skills. This progress is essentially vital especially for students who are in the fundamental program or in the foundation level in the creative arts program, namely graphic design, multimedia design, fashion design, product design, interior design and architectural design. Design ideation can be seen as a debate of developing and communicating ideas, where 'idea' is understood as a fundamental element of thought that can be either visual, concrete or abstract. As such, in both education and other practices, it is an important component of the design process (Fowels, Broadbent, 1979:15) (as cited in Jonson, 2015).

Towards the end of the project, comments and writings in visual diary were observed as students' progression in the visual diary. Many of them started to express their thoughts, for example, thoughts as to how to improve their drawings, logo design and their art technique in general. They questioned and challenged themselves on ways and means to enhance the methods used to improve their creative designs. They also stated down the duration of the process of making their artwork. Whilst there are students who commented and criticize their own artwork and design output. Hence, the visual diary has also encouraged critical thinking and convergent thinking process. It was explained by Gardner (1973/1990) and Eisner (1981, 1982) that cognitive components will enhance learners' creative expressions and response.

#### The mean score of the 5 dimensions of the IDEO model

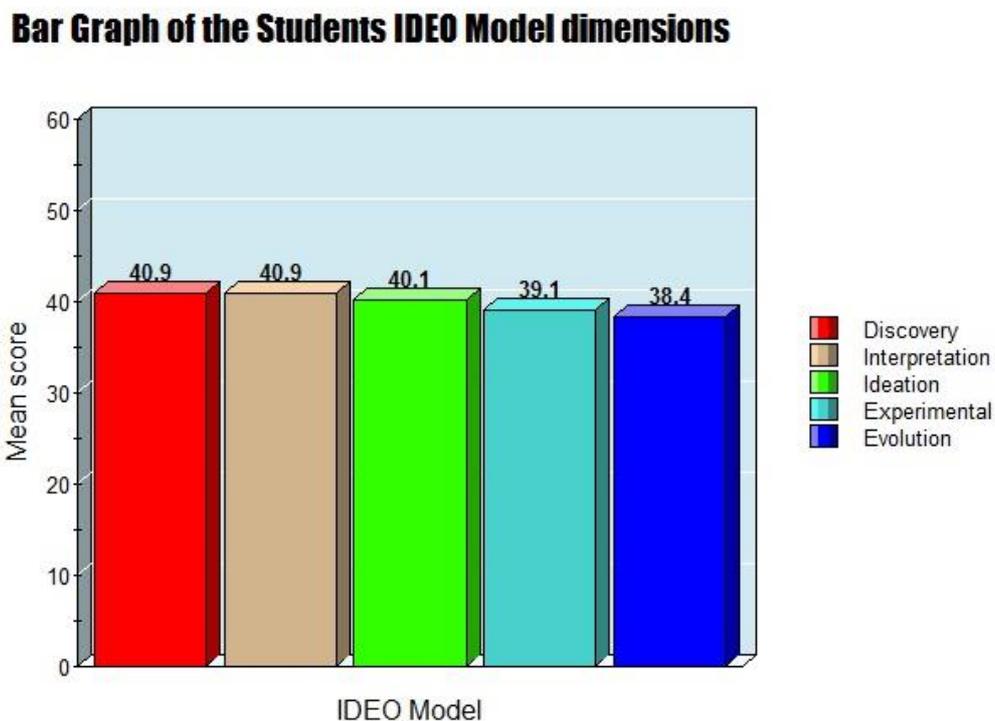


Figure 2. Bar graph of the students IDEO model dimensions.

As illustrated in figure 2, descriptive statistics are presented against the mean score of the 5 dimensions of the IDEO model. A sample of 35 students ( $N=35$ ) participated in this study. Based on the total marks, there are 5 dimensions in this model, which starts with the Discovery and the Interpretation dimensions. Students scored 40.9% for both of these dimensions. Followed by 40.1% in the ideation dimension. While for the experimental dimension, students' score is 39.1% and finally, the evolution dimension has the lowest score at 38.4%. This Bar graph of the students IDEO model dimensions, leads to conclude that, students were able to gain improvement of practical design development and art production, as indicated by their ability to understand assignment due student's prior knowledge, skill, and experience gained through the design process. The presence of IDEO assessment model significantly impacted the students' achievement in idea generation and experimentation. This study also tests a new instrument built to increase the students' creativity, and ability to interpret and understand idea generation and solving a design problem in their projects and assignments.

### **How effective is IDEO model for idea generation?**

In this study, it leads to the conclusion that, students were able to gain improvement of practical art production, as indicated by their ability to understand a work of art due to their prior knowledge, skill and experience gained through the design process. The presence of this comprehensive IDEO assessment model significantly impacted the students' achievement in their idea generation and experimentation. Similarly, the model has an impact on the evolution thinking in the student's final stage of making the art and design piece and studio production through their visual experience. The students attempted new methods to solve issues and became innovative, using fresh concepts and experiments to improve their critical thinking skills and to encourage creative problem-solving skills. They also show increase engagement in creative, critical and divergent thinking abilities.

Companies have been using human-centred design as a creative approach to problem-solving. According to (Brown, 2002) IDEO, "the process is designed to get you to learn directly from people, open yourself up to a breadth of creative possibilities, and then zero in on what's most desirable, feasible, and viable for the people you're designing for". Human-centred design has been used by businesses as a creative strategy to problem solving.

The investigations of this study revealed and discussed on how students have gained good insights and experience in the problem-solving process. This process involves five dimensions, namely; Discovery, Interpretation, Ideation, Experimental and Evolution dimensions. According to Vogel, Design thinking for educators, offers a mind-set that involves four distinct human-centred dimensions, i.e., emphatic, collaborative, experimental, and positive thoughts (Vogel, 2014). For the first stage, Discovery dimension, it is a stage to research the problem, gather as much information as one can find, and define the problem. Students has shown fair knowledge and understanding at this stage. They are able to analyse and gather facts from various resources. Thus, through this stage students appeared to have acquired a deep understanding and able to define a set of problems.

A two weeks exercise of "self-portrait character" was given and briefed to students to execute in the visual diary. Students must create a self-portrait character, where they need to list down ten characteristics about themselves or even find suitable objects to represent themselves or describe the personalities, favourite hobbies, food, games and others. From the sample gathered in this study, at first, students were not able to generate ten items about themselves. The tutor and lecturer had to guide them by asking them to relate or introduce themselves starting with their 'personal background. For example, questions like, "what is your name? where is your hometown? How old are you ..." It all began with very simple questions, since this was an early exercise and this group of students were mainly the first year, first semester students, having just completed their high school studies in the Sijil Pelajaran Malaysia (SPM). As they have just enrolled in the course of diploma in Graphic Design Program, most of the students have very little knowledge about art and design field. They even have difficulties in drawing and dealing with colours and the choice of medium at the beginning. For this, the tutor or lecturer will have to do a small ice breaking session, so that, students start to introduce themselves and be comfortable with their classmates.

After this session, students started to be more expressive by describing themselves like, "I am friendly, I am Tall and muscular, I wear a pair black spectacles, I have big fore head, I have small eyes,

I love to listen to music, I have curly hair... and as they continued with their listings, they found that there are many things they can list and share about themselves. Most of the students end their listing with, their wishes and wants, like, "I wish to be a happy person, I want to be a superstar, I wish to become a billionaire, I want to become a designer," including some interesting listing, like, "I wish to become the next Prime Minister, I wish to become a superhero, I wish to become next JACK MA, I wish to have supernatural power." The students have warmed up and become more open about themselves and willing to share their personal views and interests in their listings. From result of this findings, students are more open to share their thoughts in doing the listings and have shown a good understanding and initiative in trying to seek more information in the Discovery stage.

Next, the students had to gather and investigate the most suitable ideas, drawings and topic. They were put into small groups to share their views about themselves and their peers. There were multiple answers amongst the students, and they were all engaged in the team building and sharing of knowledge. This part of sharing knowledge is vital as the act of sharing and identifying problems are core values of the Discovery stage, wherein a deep understanding of the context can be gained. Students are also encouraged to be inspired and learn from each other, also from their lecturers or other experts. This will have helped students gain personal knowledge about the contests from others. According to Vogel(2014) in the discovery stage, it is a stage where, full engagement and focused on the subject was to prior to find solutions and answers to the design problems (Vogel, 2014, pp.49-51)

The second stage in the design process is the Interpretation dimension. Within this stage, knowledge is imparted and information gathered to be examined, where issues are dealt with from multiple angles so as to be able to interpret the design problem. According to Vogel (2014), founders of design thinking, advocate that users of this process should share observations and create meaning from the information they have obtained from multiple sources and views. From this pool of information, it is again suggested by the expert that, the information and theme, that will start to appear, should be classified, organized, and synthesized.

The students would then need to organize the listing of their ideas and to see which listings may be suitable to best suite their self-portrait character. From these listings, they had to filter and choose the best ideas. This exercise of self-portrait has limit students to only list ten items to describe themselves. This is because, students will have to learn to interpret and search for more meaning in the contexts at the Interpretation stage. Students were asked to select only four to five items which is closer to their core meaning of their self-portrait character. This process was certainly not easy for the students as it was their very first attempt of trying to interpret design projects. However, as they undergo a few sessions of discussion with their peers and tutors, they were able to select and interpret the suitable character for their self-portrait exercise. It is important for students to be exposed to the stage of Interpretation, as Barone & Eisner, (1997) stated that Business and art educators have highlighted the importance of producing future designers with different abilities, with many different features, characteristics and transformations engaged with knowledge.

According to the findings gathered from this study, students are able to interpret and combine one or more listings in the exercise for self-portrait. In the nutshell, students have scored well in the Interpretation stage, indicating that they have a good understanding of the experimental process at this stage. As (Vogel, 2014) claims, although design thinking relies heavily on human perception and the ability to apply empathy, it is crucial to relate any research outcomes to individuals and their stories. The third stage refers to the Ideation dimension. According to Vogel (2014), the objective of this stage is to try to generate and develop as many ideas as possible. As mentioned earlier divergent thinking should be practiced and the vast expansion of ideas is the main objective. For the ideations stage, the students initially had difficulty to list down many ideas. It was not easy for students to perform this task and they could only generate around 10 to 15 ideas. A mind mapping exercise was introduced to guide them to develop as many ideas as possible. The students still find it difficult to do this exercise individually. The solution was to group them in a small groups of 3 to 4 students and each group was given a topic to list down and generates as many ideas as possible using the mind mapping exercise.

The students constantly raised questions as to whether it is the right answer to use in the mind map? The advantage of the ideation stage is that, there is no good nor bad idea, whether related or not related, special or worst ideas. In this ideation process, the students will just have to be focused and jot down whatever that comes out from your thoughts. The students felt more confident after one session of practice in group discussion. They then tried to perform the ideation stage, and found that they were

able to develop more ideas. According to the findings, the students were able to generate many ideas and have gained a good understanding of the process as evident from the mean score in the Ideation stage. Vogel (2014), reasons that, after producing a great number of ideas, users of this process should refine and compare those ideas against their objectives. In short, check to see which idea would best resolve your problem.

The fourth stage in the design process is the Experimentation dimension. At this stage the students had to try to test their idea and experiment with their designs for suitability to be used? Or determine if any more changes have to be made to improve the design or drawing. The students had to first produce a draft drawing and then, go on to refine their artwork that shows the whole of the concept of the idea. It is effectively a stage to examine and build a sample or to refine an idea.

After the ideation stage is completed, it is time to start the Experimentation phase. It is the fourth step in design process. According to IDEO, it is important to build upon the idea that has been developed during the ideation phase. This translates into building prototypes, making the idea tangible and learning and gain even more information by applying the solution at an early stage. Prototypes provide an excellent opportunity to gain feedback. It is important to define what kind of feedback you are looking for and how you can learn from it and make improvements. (Vogel, 2014, pp.49-51). The fifth stage is the Evolution dimension. At this stage, the final outcome or the final product of the successful, good or fair artwork of the student is produced.

Clearly, Vogel (2014) writes:

Evolution is the last phase in the design process. In this phase, the winning ideas are being applied and further developed. According to Design Thinking for Educators it is important to ensure an idea's success over time. This might include looking ahead and considering how idea's success have to adjust in changing environments, thinking about how ideas should be communicated to audiences and stakeholder. During this phase it is also important to document any process and progress. (p.51)

The final outcome for this group of students is to produce their visual diary. Students will be assessed based on the final outcome of their artwork. According to the result gathered from this finding the students achieved a weaker mean score in the Evolution dimension. This could be due to the lack of time to produce better artworks towards the end of the semester, when the students will have to produce and submit many assignments. These first-year students, will have 3 to 4 core subjects in Graphic Design. The students may not pay full attention and commitment to the final outcome due to tight deadlines for assignments of other subjects from the Creative Arts Program. Secondly, as mentioned in the Experiment stage, the students lacked studio and drawing practice, leading to their weaker mean score at the Evolution stage. However, there is very little difference between the mean scores of the Experiment and Evolution stages. This IDEO assessment model is still considered an effective model for students of the graphic design program and it is recommended that this model be used for future assessment of the visual diary assignments.

This model is also suitable for projects or assignments in other design subjects and areas. IDEO model is distinguished as one of the most successful design thinking model which has been widely practiced by the creative industries as well as in art and design education. As claimed by Vogel (2014), all of these procedures will assist the problem solver to become more conscious of the type of thinking they might want to apply to resolve the issue. Having the ability to learn deliberately when to use divergent and convergent thinking can assist people to attain the ideal state of mind when creating the best suggestion for problem-solving. This creative process will allow us to improve our ability to develop and generate new and original ideas.

### **The Key Influence of This Work towards Art and Education.**

The key influence of this research have established and strengthened the claim that visual diary is an excellent tool for idea generation for the local tertiary art and graphic design program. The visual diary enables students to gain a better understanding of the development and experimental process

in generating ideas. It is evident from this study that the visual diary can be effectively used as a structural, multidisciplinary and multidimensional instructional instrument (Scott, 2010).

In addition, previous studies demonstrated that the involvement of the utilization of visual diary can be connected to any training course for school tasks and assignments. This research likewise demonstrates the significance of utilizing visual diary in the imaginative planned process as expressed by Huber, Leigh and Tremblay (2010), whereby it can be used in the classrooms by students and designers in creative practice. According to the results of this research, students in the foundation year of the creative arts program are often not able to express ideas or generate multiple thoughts in the design thinking process, due to lack of knowledge and practices in design activities.

Hence, it is imperative that the tertiary level creative arts universities, in particular the instructors of the foundation year, should be aware of this situation and help students to learn to generate and develop multiple ideas using the visual diary as an effective pedagogy in both art and design program. As Aurum et al. (2003), mentioned ideation process has always been associated as the main activity of creative idea generation amongst the creative art industry ranging from the field of architecture, fashion, advertising, graphic design, to product design. It is one of the main objects of the art and design education. With the introduction of IDEO assessment model, students have been offered the opportunity to engage in a greater level of creative and critical thinking and improve their ability to extend their imagination, build up effective communication skills and make critical choices and assessments.

Furthermore, the study has proven that the IDEO assessment model has effectively improved the student's learning process, with a great impact on their academic achievement. The achievement of students has been especially important in the field of art education and education, as a whole, to improve their skill levels and prepare for adulthood. Students would be mentally involved in information processing through classroom learning activities. They have been able to discover a material understanding by recognizing links between the concepts they were taught and able to connect new concepts with previous knowledge.

Thus, the implementation of the visual diary coupled with the IDEO assessment model, offers students the opportunity to engage in a greater level of creative and critical thinking by enhancing their imagination. It is a helpful resource for the lecturer to guide the students to develop their cognitive skills or enhance their thinking skills. It was found to be a significant strategic component in the graphic design and creative arts program.

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