Al-Academy Journal
Issue 111
Journal homepage: https://jcofarts.uobaghdad.edu.iq
ISSN(Online) 2523-2029/ ISSN(Print) 1819-5229
DOI: https://doi.org/10.35560/jcofarts1197

Problem Solving Methods for Design Ideation: Building Creativity in Interior Design Projects.

Abdulsamad Alkhalidi [a1], *Amnah Khaled Adas* [b]

[a] *College of Fine Arts and Design, University of Sharjah , UAE*

ARTICLE INFO

Article history:
Received 7 May 2023
Received in revised form 3 June 2023
Accepted 7 June 2023
Published 15 March 2024

Keywords:
Design Ideation
Problem-solving
Interior Design Students
Interior Design Process
Creativity Methods

ABSTRACT

Interior design students face challenges in understanding creativity and applying it while designing. Many techniques and methods are taught to students to encourage the creative design ideation process. One of the most effective techniques that aid in creativity is the Creative Problem-Solving technique. This research aims to investigate and analyze the creative problem-solving method, and its relation to creativity. Specifically, it investigates how well do interior design students understand creativity and how to apply the creative problem-solving method correctly. In this context, creative problem-solving method is defined as a process in which designers create new problems for their projects, to be able to find new solutions for them. To gain a deeper insight about creativity and the creative problem-solving technique from the students' perspective, an online survey was distributed, and an interview was conducted. The online survey was distributed to interior design students at different educational levels, and across the world. While the survey was conducted with a bachelor interior design student from University of Sharjah. The results aroused some unexpected questions and conclusions. The results showed that although students are confident of their creativity and aware about the creative problem-solving technique, they are still not applying it correctly and effectively.

[1]*Corresponding author.*
E-mail address: aalkhalidi@sharjah.ac.ae

1 Introduction

Creativity is a very unique characteristic that belongs only to humans among all the other creatures in this world. The history of the human culture was shaped due to the use of creativity and without it, humans wouldn't have developed from simple people living in caves to what humans live like now. Art as well develops from "scribbling in early childhood, to renderings constrained by image rather than perception, then into the stage of "realistic" drawing in late childhood and early adolescence" (Cox, 1992; Golomb, 1992; Luquet, 1927). Just as in Art, Creativity in design can also be developed using proven techniques, methods, and practice. Interior design students are introduced to the creative problem-solving method in the studio courses to increase the creativity in their design ideation process.

1.1 Research Problem

Interior design students usually face challenges and difficulties in understanding and applying the creative design process. Many techniques and methods are taught to students to aid and enhance their creativity in the design ideation phase (Jonas. 2018) The "problem-solving" technique is the most common one and the most effective in the field of design. Since it is already embedded in the curriculums of the design process, it is important to understand it and explore how to apply it effectively in order for the students to be able to create creative design ideas. It is a reality that many fresh graduates and commercial design firms design for the aesthetic appeal only, without a focus on originality, functionality, and innovation. It is noticed among most of the design students that on most of the projects they always tend to copy and imitate other's works under the concept of "inspiration". This is the reason that pushed me to start researching and exploring the concept of creativity, its methods, and its importance for interior design students. I have started last year in researching about the capabilities of creativity among different people and getting a basic knowledge about the Problem-Solving Technique.

1.2 Importance of the Problem

This research is conducted is to explore and understand the importance of the "Problem-Solving creativity technique" in the design ideation process for interior design students. Interior designer now are needed to be creative and innovative not only in designing an aesthetic appealing space, but also be creative in creating design solutions for safety, functionality, and sustainability. Thinking critically impacts designers in many ways, including determining client needs, solving difficult space plans, making business decisions, and dealing with clients and others with interests in the project (Piotrowski, 2011). This research's aim is to understand and analyze how the problem-solving technique can be applied more effectively to boost creativity in interior design students.

1.3 Relevant Scholarship

In a previous study by Piatkowski, she mentioned that the world and the design profession have become incredibly complex. Designers are bombarded with information from numerous sources and thinking critically is a vital skill in their daily life and their profession. (Piotrowski, 2011). Another opinion by Chesbrough says that innovative solutions to challenges exist somewhere in the world and a person's "creative" process is no longer problem solving but "solution finding" (Abrahamson & Ryder & Unterberg, 2013). Problem solving plays a huge part in the design process, so it is essential for designers to have a clear understanding of the nature of the design process, if they are to actively pursue design thinking (Stolterman, 2008). Design education could be improved by including more explicit explanations of design thinking, which may help designers create concepts that solve design problems and lead to unleashed innovation (Ambrose & Harris, 2010). Problem solving methods for designers are typically taught in studio courses, which teach design as an action or skill, and knowledge-based courses, which

teach topical and technical subjects (Oxman, 2004). Schön (1990, 2010) discussed the reflective habits of new designers as they solve design problems, concluding that the fundamental concepts of design can only be practiced through design thinking.

1.4 Research Questions

This research aims to analyzing how interior design students use the problem-solving method to aid in the creative design process. What are the steps of the problem-solving methods? How is it different from other creativity techniques? How does it affect interior design student projects and the design ideation? After examining all the answers to these questions, the research will explain how the problem-solving method aid in creating more creative design ideas and therefor take interior design to a more creative level. Babs Van Hasel, CEO of Aces of Space design firm, addresses interior design graduates and says, "The world of design does not need any more designers, it needs creativity and creative people", that's why it is important to address and research this topic and look for applying it.

2 Literature Review

2.1 Definitions

2.1.1 Creativity

Many researchers through time set a "standard definition" for creativity, which was that "creativity is combining both originality and effectiveness" (Runco & Jaeger. 2012). But according to Simonton, "Creativity" is not a term that can be understood by just looking it up in a dictionary. (Simonton. 2018). The skill of creativity is a complex process that involves action from both, the conscious and the unconscious mind (Rusu. 2018), and according to Rusu, "creativity means rejecting the conventional, the routine, and finding new solutions". It is a process of producing ideas, creative persons engage in that process, and then a creative product contains those ideas and communicates them to others (Simonton. 2018). Creativity cannot have a single, standard definition, it cannot follow certain criteria, but there are limits that can be set in order for the term "creativity" to be used meaningfully (Gotz. 1981). These limitations can be found in Pfeiffer's definition of creativity and creative products as " a piece of work which is first to a significant extent new, original and unique and second shows a high degree of success in its field" (Pfeiffer. 1979). While Pfeiffer's definition can be considered the nearest to an accurate definition for creativity, researchers won't stop asking the question " what does creativity actually mean?" (Simonton. 2018). Defining creativity can be difficult, but most of the trusted definitions of it by philosophers, psychologists, and writers define it as a skill that produces originality, novelty, quality, and a hint of surprise. (Rusu, 2019). In 1926, the social psychologist, Graham Wallas, claimed through research that creativity can be achieved in 4 stages. Wallas' four stages of creative thinking process are Preparation, Incubation, Illumination, and Verification. 1) Preparation: "the stage during which a problem is 'investigated in all directions'", 2) Incubation: "the stage during which a person is not consciously thinking about the problem", 3) Illumination: "the appearance of the 'happy idea' together with the psychological events which immediately preceded and accompanied that appearance" , 4) Verification: The period of conscious work that follows the inspiration when actions are taken to improve the ideas and what was produced during illumination (Wallas. 1926). Sadler- Smith uses the role of conscious and unconscious mental process to redefine Wallas' stages of creativity as, Preparation: (Conscious work); Incubation (non-consciousness); Illumination (focal consciousness); Verification (conscious work), (Sadler-Smith. 2015)

2.1.2 Creative Problem Solving

Creativity is a skill that aids people in solving problems in various areas and fields (Sternberg & Lubart. 1995). Since creativity is an acquired skill and is not limited to a certain type of people, there are some methods, techniques, and practices that develop the skill of creativity in people. One of these methods and techniques is the " Creative Problem Solving" method. Creative Problem Solving is the process in which an individual would create new problems to prepare to look to an existing problem from new perspectives, therefore coming up with new and creative solutions (Rusu. 2019). Unlike the standard Problem-solving method, the Creative problem-solving method is more systematic, and it focuses on creating and thinking of as many ideas and solutions as possible before begging the problem-solving process. It consists of 6 stages: 1) Identifying the problem: create a clear understanding of the problem, 2) Research: Gather data about the problem by using different methods like books, internet, or taking advice from friends and family, 3) Generate: creating as many ideas as possible, focusing on the quantity rather than the quality, 4) Analyzing: understanding each idea created in the previous step and listing the pros and cons of each idea, 5) Solutions: choosing the most perfect idea for the situation, 6) and finally taking an Action and performing the chosen solution.

2.1.3 Interior Design Process

The interior design process involves solving problems by developing creative ideas and "creating spaces and spatial elements". Although it is not totally clear what occurs in the human brain during the ideation phase and how creative ideas are developed, designers usually undergo a sequence of steps to reach a creative idea (Suh & Cho. 2018). In interior design field, it is believed among professionals that a certain design process guides and results in creative ideation. The interior design steps and stages defer slightly from a designer to another, and from a project to another based on the space's size and design type; In small residential projects the steps are less than of those required for designing a huge commercial project (Burgiel. 2019).

2.1.4 Design Ideation

Design ideation is considered to be the third stage in the design thinking process, a creative process in which designers use methods and techniques to generate creative and effective ideas (Dam & Siang. 2020). The design ideation stage is the process where a person or a group of people generate ideas and solutions through sessions such as Sketching, Prototyping, Brainstorming, Brainwriting, Worst Possible Idea, and a wealth of other ideation techniques (Dam & Siang. 2020). A more complicate definition of design ideation can be as the intention of designers to "explore and utilise material qualities to develop and communicate their ideas" (Grigg. 2020).

> "Ideation is the mode of the design process in which you concentrate on idea generation. Mentally it represents a process of 'going wide' in terms of concepts and outcomes. Ideation provides both the fuel and also the source material for building prototypes and getting innovative solutions into the hands of your users."
> – d.school, An Introduction to Design Thinking (2020).

2.2 Creativity Factors

The level of creativity differs from a person to another, and just like any other skill, it can be developed through different techniques. Up until the 1950s psychologists thought that creativity is similar to IQ, that it was given and inherited at birth and that it can't be

changed later (Rusu. 2019). The psychologists Sidney Parnes and Paul Torrance spent two decades (1955-1972) conducting researches and studies to prove that creativity can be developed like other skills and that individuals are not born with a fixed level for it.

2.2.1 Biological Factors

According to psychologist John Garrison, the skill of creativity is associated with the human characteristic of being open to new experiences, a characteristic that is affected by the genetic foundations (Karosik. 2017). Garrison stresses on the fact that it is complicated to completely refer to creativity as an inheritable characteristic, but the genetics still plays a huge role in shaping creativity in a person by linking other characteristics to it (Karosik, 2017). Age is another factor that Torrance (1962) argues that affects the skill of creativity, the relationship between age and creativity is an inverse relation after the age of 17 years old. From the age of 9-17 years old, the human brain reaches its peak in the effectiveness of creativity, after which the curve starts decreasing and the inverse relationship starts working (Rusu. 2018). Another biological factor that contributes to the level of creativity in humans, is mental illnesses, or as Aristotle (1953) describes it "genius and insanity". Findings of researches on the relationship between mental illness and creativity are very contradictory; it can be deeply related (Kottler. 2005), or somehow related but with the interference of other factors (Sawyer & Weisberg. 2006), or it can be absolutely not related (Schlesinger. 2009).

2.2.2 Social Factors

The first step toward building an individual's creativity starts from the family; the method of raising children highly contributes to building their creativity and developing it. Some families tend to limit their kids' imagination and creativity by ignoring them when asking too many questions or limiting them from asking in the first place, therefore weakening their creativity (Rusu. 2018). Every creative person carries within the traces of family, class, age, friends, environment, and culture to which he belongs (Rusu. 2018).

2.3 The Creative Stage in the Interior Design Process

Researches have always linked creativity with design practices. Design and creativity are related since both skills are involved with generating new ideas and problem solving (Dorst. 2003). Since Creativity and Design are frequently linked together, Design tutors always expect from their students creative designs and creative products. In order for them to get what they expect, they teach their students the "creative design process", which further develops the design process towards more creative results and designs (Wong & Siu. 2012). It is essential to students to identify the route to a creative design for them. When teachers identify the creative design process to students, not only they teach them implementing creativity in their designs, but also open their eyes to the fact that creativity is a skill that can be taught and learnt and change the misconception that creativity is limited to certain people (Isaksen & Murkock. 1993). In order for students to understand the creative design process, they must analyze and study the typical design process first. The creative design process is considered to be a subset of the typical design process, since it can be considered as the typical design process that results in a creative output.

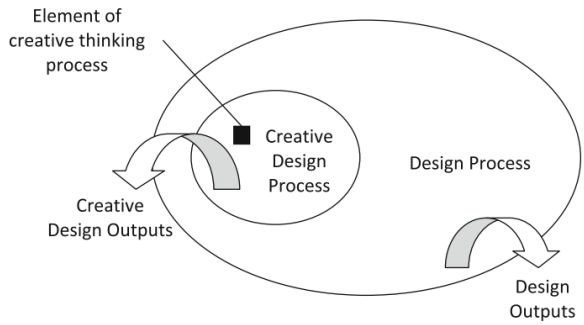

Figure 1: model of creative design process- Wong & Siu 2011

The beginning of the design process is usually a problem (Chand & Runco. 1992), and the problem is solved by the output or result of the creative design process (Aspelund. 2006). Recently, in the last few years, the creative design process has been given a system or a set of stages, so that fresh designers and student can apply the process more easily (Aspelund. 2006). In 1984, C. J. Jones suggested that the design process is a three-stage process that consists of first, analysis, then synthesis, and finally evaluation. On the other hand, also in 1984, L. B. Archer suggested that the design process is actually a more complex process that consists of six stages; 1) programming, 2)data collection, 3) analysis, 4) synthesis, 5) development, and finally 6) communication. Others like Luckman (1984) believed that the design process in not a linear process, it is a continuous cycle of the three stages described by Jones. In interior design, the creative design process is frequently adjusted depending on the nature of the project, yet still there is a standard process that designers follow and adjust based upon (Burleigh. 2019). Small projects may not require going through every step of the creative design process as the larger and more complex projects, but even the simplest projects benefit from a " systematic progression through a series of steps in logical sequence to solve the design problem" (Nissen & Faulkner. 1994). According to designer Ula Burleigh (2019), the interior design process she follows consists of 8 stages:

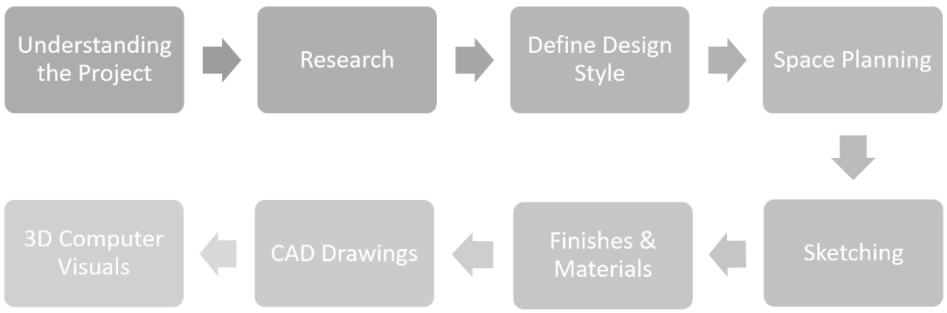

Figure 2: Interior Design Process Burleigh 2019

However, interior designers Luann Nissen, Ray Faulkner, and Sarah Faulkner created a more detailed creative design process for fellow designers to follow when working on any project and summed it up in their book *Inside Today's Home* (1994). The main steps or stages of their design process is as follows:

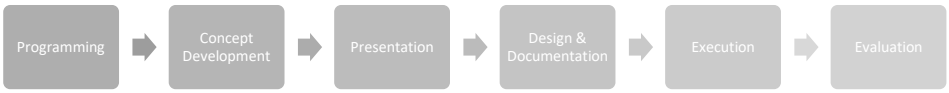

Figure 3: Design Process Nissen & Faulkner 1994

The main creative ideation process is applied in the concept development phase, it involves applying the creative thinking techniques like; brainstorming design solutions, Problem-solving, or other techniques either by verbal, sketched or written means (Nissen & Faulkner. 1994).

2.4 Inspiration, Imitation, and Creativity in Design

When describing a design as a copy of another or as an imitation of another, it is understood that this design is unlikely to be considered creative, since one of the characteristics of creativity is originality (Besemer & O'Quin. 1999). The demand for originality and creativity in creative problem solving implies that imitation limits creativity (Heyes. 2011). In 2016, Researchers Okada and Ishibashi conducted studies and experiments on the creative thinking process of artists and specifically how imitation and inspiration affects the end products of artists and designers. They proposed experiments and studies to explain how creativity can be initiated and developed through the act of imitation and copying and they performed their experiments on freshly graduates that have little or no art experience. Each graduate was asked to draw multiple drawings based on several criteria involving copying, imitating, and realistic drawings (Okada & Ishibashi. 2016). Through their first experiment they found that the graduates were able to produce creative drawings through copying the styles of unfamiliar artworks and unfamiliar art styles, and the art that was produced was different that the original shown art models. In their second experiment, the graduates were asked to copy the style of familiar artworks and familiar styles. The results of the experiments showed that the level of creativity of artworks created during the first experiment was higher than those created during the second experiment. They concluded from these experiments that "through imitation of others' artworks, participants formed new perspectives of object materials they were asked to draw" Okada and Ishibashi (2016). Okada and Ishibashi studied Van Gogh and Picasso's creativity through imitation, and they suggested that imitation of other people's work or their previous works is a deriver of creativity, even though they're experts. After conducting several experiments with undergraduates studying Art or Design, they found that students who spent more time generating and thinking about the problem, produced more creative ideas, products, or Art. Okada and Ishibashi (2016) concluded that to be inspired by others' works and be able to create creative and novel ideas, an internal process of a visual change needs to be involved.

2.5 Creative Problem Solving in Interior Design

There is no doubt that interior design is more than just choosing furniture or colors, it is a more complex process (Piotrowski. 2011). The process of problem solving is involved in interior design by understanding ideas and utilizing these ideas to create spaces and spatial elements (Suh & Cho. 2018). Problem solving is always the core of interior design regardless of the type of the project, the status of the client, nor the nature of the designer (Piotrowski. 2011). The key start to any successful interior design project is defining the "right" problem, not any problem, e.i. : There are multiple ways to design a bedroom or an office floorplan, but defining the right problem is the key to know the best way to space plan the area (Barnard. 1992). The difference between the standard problem solving in interior design and the creative problem solving is the quantity of

ideas. The first goal or step a designer should take in the creative problem-solving method is defining as much problems as possible, to later analyze and choose the most clear and suitable one to follow in the design process (Piotrowski. 2011). A study published by Getzels and Csikszentmihalyi (1976) on creativity and its link with creating art and design revealed that art and design student who spend more time practicing the Creative Problem-Solving technique, produced or created more creative work than others. After 7 years, they conducted another study to follow up with their previous one, the results showed that the use of Problem-Solving technique "was a predictor of future success as an artist and designer". They also suggested that problem-finding activities can trigger students' artistic experiences, emotions, and idea generation. Through their other researches, they found that when artists and designers start creating, they first develop problems and then create mental images that address the new problems. When artists try to create new concepts, they tend to change their minds and practice trial and error more than non-artists (Getzels & Csikszentmihalyi. 1976).

3 Methodology

3.1 Introduction

The aim of this research was to explore and analyze the meaning of "creativity" according to interior design student and the way "creative problem-solving" methods are applied in their teaching to help them achieve creativity. To gain enough data to analyze, both quantitative and qualitative methods were used. In addition to the use of secondary data sources from online data bases, books, journals, and articles.

3.2 Quantitative Methods

The quantitative method used in this research is conducting a survey. It consisted of 6 multiple-choice questions, 4 Likert scale questions, and a 1 short answer question. The aim was to reach at least 100 respondents, of whom are the majority university students, and preferably interior design students. The survey was conducted online using the "Google Forms" platform, and it was distributed among social media applications to students of College of Fine Arts & Design in University of Sharjah and other universities as well. Over the course of 4 days a total of 126 people responded to the survey, but only 112 were completed to be analyzed.

3.3 Qualitative Methods

Since creativity is somehow a controversial topic, an interview was conducted in addition to a short answer question included in the survey to gather different opinions of students. The person selected for the interview is an interior design student from University of Sharjah that has experienced this research's problem and relates to it, and she was chosen to give a deeper insight about the problem.

3.4 Methods of Analysis

After gathering data from primary and secondary sources, an introduction was written to address the topic, the research problem, and its importance. After that a literature review was written to gain a deeper insights and knowledge about the research's topic from different point of views throughout the years. Surveys and interviews were conducted after gaining knowledge about the topic, and the data gathered data from them was later filtered and prepared for writing an analysis and a discussion about the findings.

4 Findings and Discussion

4.1 Survey Results and Analysis

Out of 121 respondents to the survey, only 112 of the responses were analyzed because the other 9 did not fully complete the survey.

In the distributed survey, the first question was asked to know at what level of university are the respondents. Out of the 112 analyzed answers, 106 people are undergraduate students, 2 are postgraduate students, and 4 are not university level students. The results show that most of the respondents to the survey fit the criteria and the topic of the research.

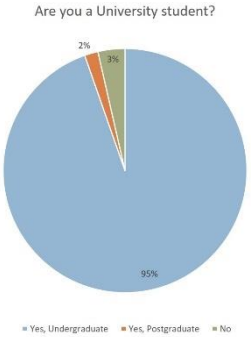

Figure 4: Survey Question 1

The second question in the survey was asked to examine people's trust in their creativity. 101 of the respondents answered that they think they are creative while the other 11's answer was no; they don't think they are creative. These results show that the majority of student do believe in their level of creativity while the minority haven't discovered the area of creativity inside them yet.

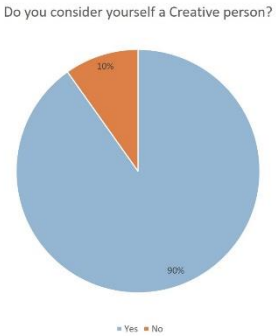

Figure 5: Survey Question 2

The third question was asked to examine if people think "creativity" is an innate skill or an acquired one. The answers to this question was a bit diverse, 74 of the respondents think it is an acquired skill, 22 respondents think it is an innate skill, and only 16 respondents think it is a mix of both. The results show that only the minority have enough knowledge about the source of creativity inside them.

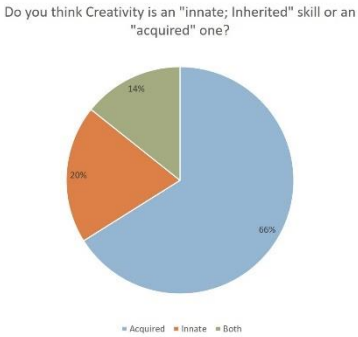

Figure 6: Survey Question 3

Respondents who answered the previous question as " creativity is an acquired skill" were directed to an extra question that examines the reason or the factors that affects the level of creativity. Out of the 90 respondents, 61 respondents think that family is a factor of shaping creativity, 75 think society has a role as well, only 42 respondent think that school is factor too, 52 think that friends play a role too, and only 4 think that personal life experiences can affect our creativity.

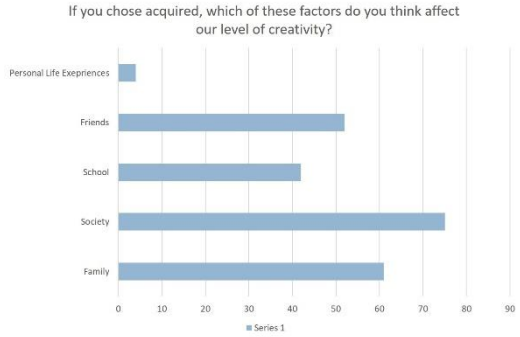

Figure 7: Survey Question 4

he fifth question was asked to examine if people think creativity can be developed better in groups or individually. 48 respondents think that creativity can be developed better in groups, 56 respondents think that creativity can be developed better individually, while 8 think it is developed better when it is a mix of both. The results prove that the majority prefer individual creativity training since each person has their own level of creativity and their own case.

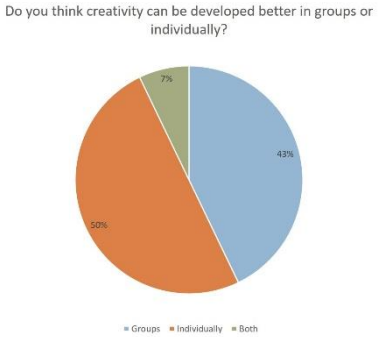

Figure 8: Survey Question 5

The sixth question is about the responsibility of the tutors on their students' creativity. 90 out of 112 respondents are aware that the responsibility is equal on both, the student and the tutor. 11 respondents think that it is totally the tutor's responsibility, while the other 11 think it is totally the student's responsibility.

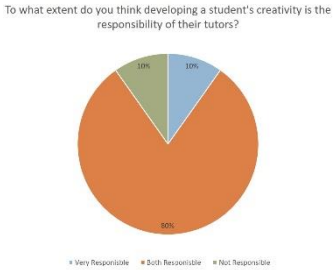

Figure 9: Survey Question 6

The seventh question is asked to examine if the respondents are familiar with the term " creative problem-solving". The majority, which are 91 respondents, are familiar with the term creative problem-solving, while only 21 respondents are not familiar. This shows that a bit more effort can be taken to spread more knowledge about the Creative Problem-Solving technique.

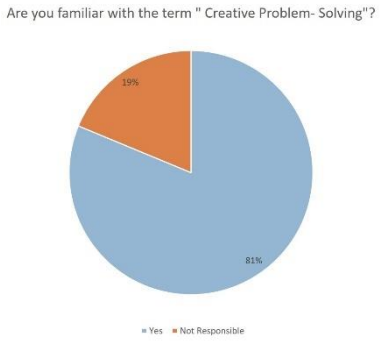

Figure 10: Survey Question 7

After that a Likert scale question about the strength of the relationship between "creativity" and "problem-solving" was asked. Only 64 respondents think they are strongly related, 42 respondents think relationship is neutral, and only 6 respondents think they are not related at all.

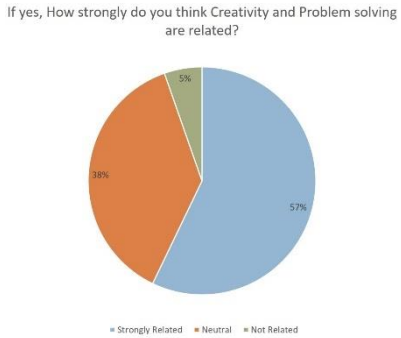

Figure 11: Survey Question 8

The following question was asked to examine if the respondents think that it is possible to develop a person's creativity by teaching them the "Creative Problem-Solving" technique. 74 respondents strongly agree with this theory, while only 16 respondents disagreed. The remaining 22 respondents thought that it is possible only to some extent, but not fully possible.

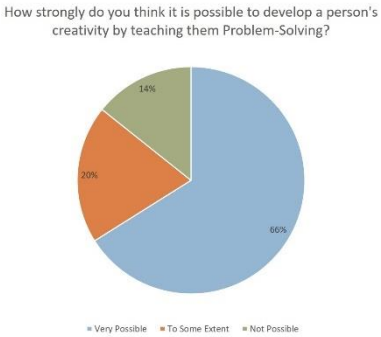

Figure 12: Survey Question 9

The tenth question of the survey is also a Likert scale question, and it was asked to see how strongly the respondents agree with this quote: " the world doesn't need more designers, it needs more creatives" – Babs Van Hasel , ACES of Space. 61% of the respondents strongly agreed with this quote, 10% disagreed, and the remaining 29% gave a neutral answer.

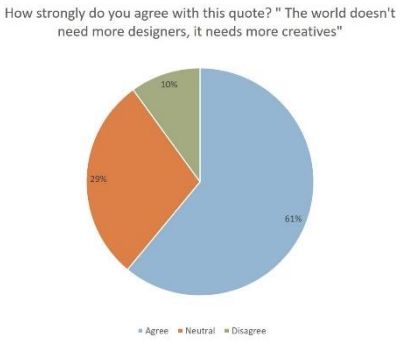

Figure 13: Survey Question 10

The final question of the survey is a short answer question asking the respondents to define creativity in their own words. All the answers revolved around the idea of creating something new and original, and unpredictable. Some of the answers : "It is when you do something unfamiliar, that makes people amazed and want to read or look at the thing again and again", "Creativity is everything a human wants to create, but takes decades to perfect", "Coming up with solutions to problems in new ways", "Thinking outside the box , and displaying your own smart ways of dealing with something".

4.2 Interview Analysis

For deeper insights about the research problem from a person experiencing it, an interview was conducted with Aysha Nufais, a creative interior design student at College of Fine Arts and Design, University of Sharjah on the 1st of December 2020 through the social media platform "WhatsApp".

The first question that was asked is "Do you believe that creativity is an acquired skill, not a skill we are just born with?". Aysha's answer was as follows " I believe that talents and skills are something that everybody has in them, it just depends on what type of talent we choose to nurture and water to grow more. Creativity isn't a skill, it is more of a thought process, it's something you have going up in your head. Creativity is not a skill that you can perfect with practice.".

The second question asked was "How do you define a creative interior design student?" and her answer is as follows: " Creativity is an integral part of interior design. A creative design student has to have that WOW factor in their designs, they have to break rules and think out of the box, and most importantly, be always steps ahead of their colleagues and classmates.".

The third question asked was: "To what extent do you agree that interior design students are facing difficulties in understanding how to be creative?". Her answer was as follows: " As I said before, I don't think creativity is something that can be taught like a skill. Trying to always be creative is a bit of pressure on us students, instead of focusing ourselves on learning creativity, we should focus on our thought process that eventually leads to creativity."

The forth and most important question was about examining Aysha's knowledge about the Creative Problem-Solving technique and the way it is applied in her studies. Her answer was as follows: "Creative Problem-Solving becomes a problem itself when students start consider a Problem Solver as a creative person. Creativity and problem

solving are two different things. Solving a problem is easy but solving it in a way that hasn't been solved before is what makes it creative.". This answer shows that although interior design students are being taught how to be creative by using the creative problem-solving method, they are not being taught well on how to choose their problem correctly. When students learn how to choose and define their problems, it is when creative solutions start coming up.

The final question asked to Aysha was about her opinion on the difference between getting inspired by others and copying other's works. Her answer was as follows: " I believe that all of us are influenced by works that have been done before. No work is 100% original, nothing comes out of our head out of the blue. Everything you do is somehow influenced by something you've seen, heard, felt, touched, etc. I don't think getting inspiration is considered copying, but at certain times, when students are under the pressure of deadlines and time, they end up using ideas without putting their input into them to save up time, and that happens quiet often."

5 Conclusion

This research's aim is to explore and analyze the effect of the Creative Problem-Solving technique on the creativity of interior design students. Based on the quantitative and qualitative data gathered and the information collected from primary and secondary data, it can be concluded that interior design students do use the creative problem-solving technique to increase their design's creativity. However, the conducted interview with the interior design student aroused an insight on how effectively is the creative problem-solving technique being taught; the students are dealing with design projects as problems, but still they don't know how to define the correct design problem to find a solution for. Based on these conclusions, interior design tutors should consider putting more effort on explaining the nature of creativity to students, to later decrease the pressure of " being creative" from students. Finally, conducting this research has helped in gaining a better understanding of the Creative Problem-Solving method, what creativity means to students, and the way they are applying it.

6 Bibliography

1. Amabile, M, T. (2012). *Componential Theory of Creativity.* Harvard Business School.
2. Barnard, S. S. (1992*). Interior Design Creativity: The Development and Testing of a Methodology for The Consensual Assessment of Projects*.
3. Cho, J. Y., & Suh, J. (2020). *Interior Design. Encyclopedia of Creativity*, 685-694. doi:10.1016/b978-0-12-809324-5.23600-6
4. Corrigan, A. M. (2010). *Creativity: Fostering, measuring and contexts*. New York: Nova Science.
5. Cuadra, R. L. (2019). *Understanding creativity: Past, present and future perspectives*. New York, New York: Nova Science.
6. E. Najafi, M. A. Khanmohammadi, K. W. Smith. (2019). *Architects and Engineers Differences*: A comparison between problem solving performances of architects and engineers in the ideation phase of an analogy-based design. 29(1): 15-25.
7. Faulkner, R. N., Nissen, L., & Faulkner, S. (1994). *Inside today's home*. New york: Holt, reinhold and wilson.
8. Interior Design Process [*An insight into a Pro Designer's Creative Process*]. (2019, June 04). Retrieved November 06, 2020, from https://ulaburgiel.com/interior-design-process/

9. Jonas, W. (1993). *Design as Problem-Solving? or: Here is the Solution - What was the Problem?* Hochschule der Künste Berlin, D-1000 Berlin 12, Germany
10. Lee, H, J. (2017). *Building creative confidence: lessons from an interdisciplinary* course about creativity for first-year college students. University of Florida.
11. Phases of Interior Design Process: *Are You Doing It Right*. (2020, August 14). Retrieved November 06, 2020, from https://www.bluentcad.com/blog/phases-of-interior-design-process.
12. Piotrowski, C. M. (2011). *Problem Definition and Analysis*. In Problem solving and critical thinking for designers (pp. 35-58). Hoboken, NJ: Wiley.
13. Runco, A, M. (2007). *Creativity : Theories and Themes*: Research, Development, and Practice.
14. Rusu, M. (2018). Education: 1. *Creativity and Problem Finding/Solving in Art*. Review Nof Artistic Educatio, 16(1), 212-222.
15. Rusu, M. (2019). *Review of Artistic Education: 1. Methods of Individual Creativity Stimulation*. Review Nof Artistic Educatio, 18(1), 275-286.
16. Simonton, K, D. (2016). *Defining Creativity: Don't We Also Need to Define: What Is Not Creative?* 52(1), 80-90.
17. Suh, J., & Cho, J. Y. (2018). *Analyzing Individual Differences in Creative Performance*: A Case Study on the Combinational Ideation Method in the Interior Design Process. Journal of Interior Design, 43(3), 9-23. doi:10.1111/joid.12124
18. *Why Creativity is the Most Important Skill in the World*. (n.d.). Retrieved November 06, 2020, from https://www.linkedin.com/business/learning/blog/top-skills-and-courses/why-creativity-is-the-most-important-skill-in-the-world
19. Wong, Y. L., & Siu, K. W. (2011). *A model of creative design process for fostering creativity of students in design education.* International Journal of Technology and Design Education, 22(4), 437-450. doi:10.1007/s10798-011-9162-8.

8 Appendix

8.1 Survey Form

جامعة الشارقة
UNIVERSITY OF SHARJAH

College of Fine Arts and Design — Fall 2020/2021 Dissertation

Interior Design and Architecture Department — Survey Form

Problem Solving Methods for Design Ideation: Building Creativity in Interior Design Students

1. Are you a University student?
   - Yes, Undergraduate
   - Yes, Postgraduate
   - No
2. Do you consider yourself a Creative person?
   - Yes
   - No
3. Do you think Creativity is an "innate; Inherited" skill or an "acquired" one?
   - Acquired
   - Innate
   - Mix of Both
4. If you chose acquired, which of these factors do you think affect our level of creativity?
   - Family
   - Society
   - Friends
   - School
   - Personal Life Experiences
5. Do you think creativity can be developed better in groups or individually?
   - Groups
   - Individually
   - Both
6. To what extent do you think developing a student's creativity is the responsibility of their tutors?
   - Fully Responsible
   - Both Responsible
   - Not Responsible
7. Are you familiar with the term " Creative Problem- Solving"?
   - Yes
   - No

8. If yes, How strongly do you think Creativity and Problem solving are related?
    - Strongly Related
    - Neutral
    - Not Related
9. How strongly do you think it is possible to develop a person's creativity by teaching them Problem-Solving?
    - Possible
    - To some Extent
    - Not Possible
10. How strongly do you agree with this quote? " The world doesn't need more designers, it needs more creatives"
    - Strongly Agree
    - Neutral
    - Disagree
11. Can you define what creativity means to you?
    - _____
      _____

Amnah Khaled Adas Dr. Abdulsamad Al Kahlidi Unit 12 : Cultural Studies

8.2 Interview Form

College of Fine Arts and Design

Interior Design and Architecture Department

Fall 2020/2021 Dissertation

Interview Form

Problem Solving Methods for Design Ideation: Building Creativity in Interior Design Students

Addressed to Aysha Nufais – Interior Design Student

1- Do you believe that creativity is an acquired skill, not a skill we are just born with?
2- How do you define a creative interior design student ?
3- To what extent do you agree that interior design students are facing difficulties in understanding how to be creative?
4- Are you familiar with the "Creative Problem-Solving" technique? And the way it is applied in the Interior Design bachelor curriculums?
5- How often do you notice Interior design students copying others' ideas and designs under the name of " Inspiration?

Amnah Khaled Adas | Dr. Abdulsamad Al Kahlidi | Unit 12 : Cultural Studies

DOI: https://doi.org/10.35560/jcofarts1197
Abdulsamad Alkhalidi, Amnah Khaled Adas: Problem Solving Methods for Design Ideation: Building Creativity in Interior Design Projects..
Al-Academy Journal - Issue 111 -ISSN(Online) 2523-2029 /ISSN(Print) 1819-5229

طرائق لحلول مشكلات التصور التصميمي: بناء الإبداع في مشاريع طلبة التصميم الداخلي

د. عبد الصمد الخالدي[1]
آمنة خالد

الملخص:

تواجه طلاب التصميم الداخلي مجموعة من التحديات في فهم الإبداع وتطبيقه أثناء التصميم وهناك العديد من التقنيات والأساليب للطلاب لتشجيع عملية التصور الإبداعي للتصميم. وتعد حل المشكلات الابداعية واحدة من أكثر التقنيات فاعلية التي تساعد في تحقيق الإبداع في العملية التصميمية. يهدف هذا البحث إلى التحقيق وتحليل طريقة حل المشكلات الإبداعية وعلاقتها بالإبداع، وهنا يتم التحقيق في مدى فهم الطلاب للعملية الابداعية وكيفية تطبيق طريقة لحل المشكلات الإبداعية بشكل صحيح. في هذا السياق، يتم التعريف على طريقة حل المشكلات الإبداعية على أنها عملية يقوم فيها المصممون بإنشاء تحديات جديدة لمشاريعهم، ليتمكنوا من إيجاد حلول جديدة لها، ولكسب رؤية أعمق حول الإبداع وتقنية حل المشكلات الإبداعية من وجهة نظر الطلاب، تم توزيع استبيان عبر الإنترنت وإجراء المقابلات الشخصية، اذ تم توزيع الاستبيان على طلاب التصميم الداخلي في مستويات تعليمية مختلفة، ومن معظم الجامعات العربية والاقليمية. أثارت النتائج بعض الاستنتاجات غير المتوقعة، حيث أظهرت النتائج أن الطلاب على الرغم من ثقتهم بقدراتهم الإبداعية ووعيهم بتقنية حل المشكلات الإبداعية، إلا أنهم لا يزالون لا يطبقونها بشكل صحيح وفعال في مشوارهم التعليمي..

الكلمات المفتاحية: التصورالابداعي، طرائق الابداع، عمليات التصميم الداخلي

[1] كلية الفنون الجميلة والتصميم /جامعة الشارقة/ الامارات العربية المتحدة.