

# The effect of applying design thinking models on students of Packaging design to develop skills of creative thinking

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## ABSTRACT

There is no doubt that students of practical and technical specializations (of an innovative and creative nature) suffer a lot to achieve excellent levels of innovation and modernity, especially when they are exposed to the problems of applied design. This research indicates the need to implement an educational curriculum that improves their creativity and develops their innovative ideas through the acquisition of design thinking skills, in particular for students in packaging design. This approach to thinking is an alternative to the traditional curricula and teaching methods followed in technical and design specializations in general and in the specialty of packaging design in particular.

The research enlightens us as specialists in teaching design and teaching the fields of applied arts of using innovative techniques and methodologies that enhance our students' creative and innovative thinking skills, and this was the purpose of this study.

Design Thinking Model is a method of teaching applied design to students of the Design Department, specifically within the packaging design course at Al-Zahra College for Girls in Muscat Governorate, Sultanate of Oman. It follows in the college's system of study the use of a "project-based learning" approach for all design materials and courses. The design thinking model has implemented through many semesters between the academic year 2016 and the academic year 2020. Many students were honored after winning many international and local competitions through their produced projects in those courses in which they were taught the design thinking methodology.

This study provides evidence that design thinking methodology is a successful educational strategy, that develops the creative thinking activity and enhances the innovative skills of students, produces unique and distinctive design solutions, receives rapid spread within the field of real work, and provides excellent opportunities of experience for packaging design students in particular.

## KEYWORDS

Creative thinking, design thinking, project-based learning, packaging design.

## INTRODUCTION

Packaging design challenges, technical and technological problems faced by design students and newly graduated designers who do not have sufficient experience to face the difficulties of the realistic labor market are many.

It has become complicated and has intervene in many other aspects such as, disciplines engineering, in the physical, chemical, economic, commercial, and anthropological sides,

teaching how to design has become more complicated and requires awareness of all Cognitive Activities (Remembering, Understanding, Applying, Analyzing, Evaluating, Innovating).

Bloom's taxonomy has defined the cognitive process of creativity as the most complex cognitive activity, which is "putting elements and molecular vocabulary together to form a new, coherent body for creating an authentic product" (Anderson, Lorin W. 2001). Over the years, bloggers have noted that packaging design students find it challenging to create and develop new concepts for packaging systems. Many students also struggle to achieve excellent levels of innovation in their design proposals. The root cause of these problems may be related to the various stages of the design process, such as the difficulty of sympathy or coexistence within the challenges and their structure and exploring root solutions to them through creative ideas to solve design problems.

From a cognitive point of view, design activities are situations and stages for solving problems faced by the designer. He must produce a solution that suits the needs of consumers and meets their requirements and achieves specific functions but is subjected to a set of different restrictions (Malhotra, et al. February 1980, Volume 12, Issue 2). Problem-solving processes have been described in design as based on an iterative dialectic between structuring problems and identifying them, and then solving those problems sequentially (Simon 1995). While defining the formulation of the problem, designers improve design goals and functions, and by doing so, they reformulate their mental representation of the problem. As for problem-solving, designers develop solutions and alternatives and test them according to different standards and limitations.

Consequently, a mixture of convergent and ramified thinking is needed to continue the iterative dialectic. Convergent thinking is a logical and analytical approach to the right solutions and outcomes (Durling, N. Cross, and J. Johnson, 1996). It seems that this type of thinking, which moves towards the limited and the known alone, does not enhance the formation of creative ideas.

There is no doubt that the criterion of creativity and innovation is the most crucial criterion for assessing design quality, and as Dieter Rams have suggested in its ten principles of good design, functional design always contains innovative thinking (Rams 2018). Despite what research innovation has shown in design processes, it has been demonstrated that certain types of information for design problem data are what tends to stimulate the creative concept (Dorst, Kees; Cross, Nigel September 2001).

There are also innovative ideas within the stages and steps of design work that distinguish it by originality. The use of continuous and iterative improvement tools used in design thinking models can all reveal the hidden obstacles to designing and also explain opportunities for improvement and help designers move beyond bright ideas into more sophisticated and in-depth thoughts.

Many of the current academic programs related to practical fields, whether technical or engineering, especially design, aspire to use educational curricula as opposed to traditional education curricula to prepare students to become distinguished regarding the development of innovation and creativity skills based on the human axis in thinking.

This research explores how to enhance and develop the activity of creative thinking with skills that can be acquired and developed.

The hypothesis inherent in this study is that student creativity and innovation in academic design programs (general and packaging design decisions, in particular) are improved through the design thinking concept based on projects. Thinking Project Based Learning (DTPBL) as a successful model for learning.

The DTPBL model was applied for the students of Al-Zahra College for Girls in the Sultanate of Oman in packaging design curriculum.

Using this method reaches efficient, and authentic design solutions with quality that are also characterized by mutual interaction, teamwork, and simulation which are direct with the job market. Female students' projects have won many international and local awards and competitions, and many governmental and private institutions and companies have adopted all their design projects.

Packages were manufactured and printed, and the products wrapped in were put for sale in markets and supermarkets and retail and wholesale stores.

### **THE RESEARCH PROBLEM**

From the above, the research problem can formulate as follows:

- How do you develop creative thinking skills for packaging design students by acquiring design thinking skills as a method of thinking that raises their design capabilities and professional competence?

### **THE RESEARCH QUESTIONS**

1. What is thinking? How do we think?
2. What are the types of thinking? What is creative thinking? What is its relationship to design thinking?
3. What is design thinking? What are its models and tools?
4. What are the design thinking skills? How do we develop them?
5. What are the challenges of teaching packaging design?
6. What are the stages of design thinking in teaching packaging design?

### **THE RESEARCH VARIABLES**

#### **(Independent variable)**

Developing the capabilities of creative thinking and developing its skills by using design thinking models for packaging students.

#### **(Dependent variable)**

Raise design competence and develop design thinking skills for packaging design students.

### **THE RESEARCH HYPOTHESES**

1. Using design thinking models as a critical factor in the teaching of packaging design will raise and develop creative and innovative skills for designers.
2. Using design thinking models as an educational method in teaching packaging design, we will obtain sophisticated and innovative design results with outstanding efficiency and quality.

**THE RESEARCH METHODOLOGY:**

We used the experimental approach to applying design thinking models to students of the Graphic Design Department at the College of Zahra in the Sultanate of Oman in the course of packaging and performance observation and the development of stages of design thinking and hypothesis testing.

**SAMPLES OF APPLIED RESEARCH RESULTS**



**DISCUSSION AND CONCLUSIONS**

After completing the research with its theoretical study and performing practical experiments, the following results have been concluded:

1. Achieving the first research hypothesis, which is the use of design thinking models as an essential factor in the teaching of packaging design, which will raise and develop the creative and innovative skills of designers.

2. Achieving the second research hypothesis. Using design thinking models as an educational method in teaching packaging design, we will obtain sophisticated and innovative design results with outstanding efficiency and quality.
3. Design thinking style in project-based learning curricula encourages creativity and the overall quality of design work for arts and engineering students.
4. The alternative nature of operations thinking using design thinking tools to increase the number of opportunities, innovative design solutions, and original creative ideas, and to explore a greater depth of those ideas.
5. The use of ethnographic research in the early stages, to reveal the hidden needs and problems facing the current products. Help provide an overview of the latest available product category and identify special opportunities for innovation and development.
6. The initial stage of design thinking skills in coexistence has increased the ability of the designer to anticipate reactions to users, and it's a complete expectation of their desires, their need to reach attraction, satisfaction, and total abstention).
7. The design thinking skills second stage is to identify strictly limited issues. Whenever the information is sufficient to sharpen the designer's thought, mobilizing his/her innovative capabilities, and creative feelings, he develops several ethical perceptions that can be improved, crystallized, and polished.
8. The third stage of design thinking skills in the birth of an idea or conception of a solution is an idea with brainstorming. We will use visual representation and convert mental ideas into visual meanings (from drawings or pictures), and facilitate the absorption, and development of ideas. It facilitates their assessment, judgment, and enforceability.
9. The fourth stage is building prototypes (modeling), a process to improve the ideas for the solution, and thorough planning of the concept concerning structural design, then, integrate the plan to achieve compatibility between them, all this to complete appropriate and successful quality solutions presented to the specialists with the product.
10. The final stage of design thinking skills in the test or evaluation of the model. Test where we can extract the best available result that is applicable. Some experimental samples are presented to some merchants and consumers, taking notes and making questionnaires and opinion polls, then writing final reports of the degree of satisfaction within the commercial markets.

**11. Skills development for the packaging designer according to the steps of the form used in the experiment as follows:**

- a) The first stage; coexistence, define the users' needs for design solutions according to the problem. Knowledge of all components and conditions of the problem.
- b) The second stage, defining the problem; The determination of dimensions must be for actual needs, Accurately formulate the problem without elaborating on it.
- c) The third stage is the creation of an idea or conception of a solution, presenting initial proposals for a solution related to the data, offering more than one alternative, and comparing it. I was making a scientific decision to choose between options. I am considering the beneficiaries to choose between the alternatives.
- d) The fourth stage (modeling) a prototype and providing illustrative steps to design the prototype: Considering accuracy and fit in the design model. We are submitting a



(PROTOTYPE) form, which could be more than one according to the offered alternatives. Provide a detailed explanation of the characteristics covered by each model.

e) The fifth stage of the test: Benefit from feedback from the submitted form. Review the defect and deficiency of the structure, if any. I was correcting the model in light of the available data and developments.

## RECOMMENDATIONS

At the end of the research, the author recommends the following:

1. Amending the educational changes of applied academies to include the design thinking curriculum and attached it as a curriculum to be decided within the framework of its academic courses.
2. Scientific and educational institutions dealing with the study of design should incorporate the design thinking style as part of teaching methods in their curricula, especially colleges of applied arts.
3. Conducting a set of scientific and practical research in the science of design teaching origins and developing creative ideas for design students. Due to the lack of studies in this field.
4. Graduate studies and those interested in the design must address design thinking models for their development and research, and study their application methods.
5. The packaging students and their instructors should use design thinking models in teaching packaging design courses.

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