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# **THE RECYCLING CONCEPT IN THE DESIGN EDUCATION**

### **Abstract:**

Our world is changing rapidly due to the rapid economic development, and the resulted significant increase in the amount of produced wastes. As a result; the environmental benefits of recycling have become a major component of waste management programs. Thus, there was a need for new teaching methodology and materials in the educational sector that allows the crucial implementation of the recycling concept in the creation of all the new designs and products. Then students can learn how to create new designs from recycled materials since it became essential and a must. Thus, this research will discuss the attempt conducted by the Design department, in Effat university- KSA, to implement the recycle concept in their design studio-1. The created designs will be demonstrated and analyzed from the aesthetically and practicality points of view. As a result, this paper argues that it is applicable to make recycled products more attractive to the future generation, regarding the recovering and reusing waste products—from household use, and thereby reducing their burden on the environment.

### **Keywords:**

Environment, Waste product, Recycling, Design Studio, Education.

**JEL Classification:** I23

## **1- Introduction**

New Yorkers alone produces more than 4.0 pounds of waste per person each day (N.Y. State, 2011). Disposing of this waste material has its tremendous effect to both society and the environment, in addition to the costs of collecting them. Actions and concern for this problem took many forms, with them came the idea of recycling. Recycling is the use of solid wastes to create new things other than burying or burning it; this made people realize a lot of what they used to throw away can be useful to them again in another way. Since the 1960s, the interior design and furnishing industry began recycling the Victorian items. So, the question now is why in 2016 the design studios are still not implementing this concept, to create new generations of designers that respect and enhance the environment in their work?

Design education is at its best when students are stimulated and are subjected to different issues and environments. Creativity, Aesthetics, Functionality are three well established concepts in the design and design education (Lyon, PH., 2011). A fourth concept that must be established as well, due to the great demand for it, is recycling. Together, these four concepts can create designs and products that satisfy the users and respect the environmental needs. Thus, the purpose of this research is to illustrate that using recycling materials to create functional and aesthetical designs and products in the design studios is very applicable. This will be demonstrated through the experience conducted in design studio-1, in Effat University.

## **2- Procedure**

### **2-1- Educational Experiment**

Design Studio 101 course, in the design department at Effat University, is based on introducing the vocabulary principles, concepts and processes applicable to designs as a board domain. All the previous students' 3D model designs attempts were based on using new commercial materials; museum boards, plaster and clay, which are considered as an expensive way, especially when the student needs to redo her design several times to reach her goal. Thus, considering a new methodology in teaching the course that consider the economical point of view in addition to the environmental awareness from the overconsumption of waste products, which cause pollution and environmental degradation, was a must.

Thus, the course instructor, in fall 2016, began to think deductively and intuitively about the three Rs of conservation; Reduce, Reuse and Recycle in order to implement a waste reduction outreach. This will be via designing and building a functional recycled 3D model that can be used in interior spaces or as a useful product. In the beginning of the experiment, the students didn't realize or imagine how easy it can be to make small changes in their work routine that can save them money, energy and make them

healthier with more creativity. In addition, their work will lead to improve the world they live in for many generation to come.

## 2-2- Practical work

The student project was based on I) making a research about recycling materials, human scale and the standard measurements, II) applying the design process through ideation sketches, application of recycled materials, assembling technique, creating the final design idea, positioning the finished model in an existing environment, and finally; III) formation of the 3D model.

The practical work of the students was divided into three steps. Step one for them focused on studying the elements and principles of design. Then in step two they collected the handled and available waste products at home. Finally, step three was to create a recycled functional 3D model. The students worked on a number of different ideas. These ideas are summarized as follows:

### 2-2-1- Project (1): Kitchen Shelves (Al-Wafi, 2016)

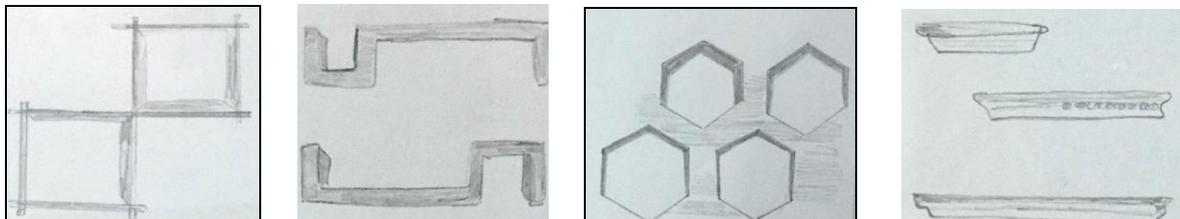
In this project, the student first made a survey on a different designs of shelves (Figure 1-a), then sketched the shelves (Figure 1-b). She used different collected waste materials to create different sketches ideas such as plastic containers, spoons, newsletter, crushed plates and cups (Figures 1-C to 1-f).

**Figure 1-a: Survey of shelves**



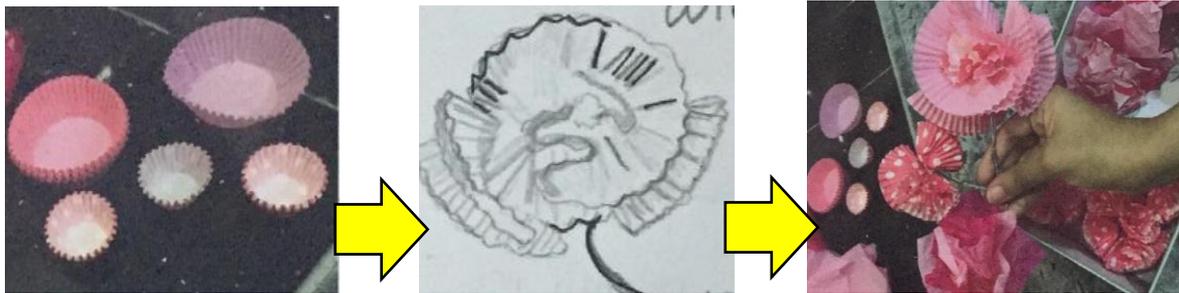
Source: (Design Studio 1: 2015)

**Figure 1-b: Sketching of shelves**



Source: (Design Studio 1: 2015)

**Figure 1-c: Cupcake papers used for the creation of a flower idea**



Source: (Design Studio 1: 2015)

**Figure 1-d: Plastic detergent and softeners containers, and Broken/ crushed dishes**



Source: (Design Studio 1: 2015)

**Figure 1-e: Foam, Newsletter and Spoons**



Source: (Design Studio 1: 2015)

**Figure 1-f: Design process of the created idea**



Source: (Design Studio 1: 2015)

## 2-2-2- Project (2) & (3): Wall Mirrors.

The students had the ability to create from one idea (wall mirror), two different designs projects evolved from the available waste products at their homes.

### 2-2-2-1- Project (2): (Al- Sulami, 2016)

The student's design depended on using the waste products (buttons, CDs, magazines, wires, plastic straw, water bottles, and Burlap), where the student applied the design process and made different sketches to achieve the recycled wall mirror idea as shown in Figures 2-a, 2-b, 2-c, & 2-d.

**Figure 2-a: Cartoon box Covered with burlap Stripes from magazines**



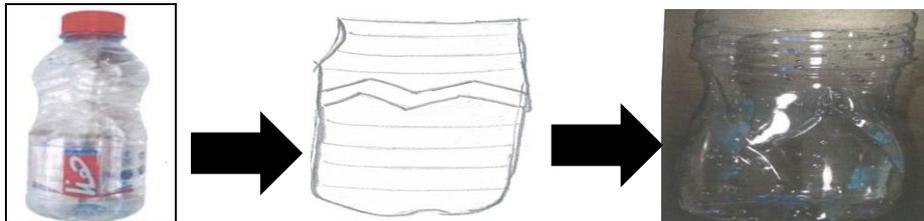
Source: (Design Studio 1: 2015)

**Figure 2-b: Wires, Buttons and Plastic Straw**



Source: (Design Studio 1: 2015)

**Figure 2-c: Water bottles**



Source: (Design Studio 1: 2015)

**Figure 2-d: Cd**



Source: (Design Studio 1: 2015)

### 2-2-2-2- Project (3): (Al Qurayi, 2016)

The 2<sup>nd</sup> design depended on using wastes such as; water bottles, clothes and Burlap. In it, the student also applied the design process and made different sketches to achieve the recycled wall mirror idea as shown in Figures 3-a & 3-b.

**Figure 3-a: Plastic water bottles, Kitchen tissue, Cartoon Cut in the form of flowers**

Source: (Design Studio 1: 2015)

**Figure 3-b: Burlap cloth cut into small pieces, Pattern clothes cover the flower shaped cartoon**

Source: (Design Studio 1: 2015)

### 2-2-3- Projects (4) & (5): Lighting Units

Again, the students had the ability to create from one idea (*Lighting unit*), two different designs according to the available waste products at their homes and their visions of what they want to accomplish.

#### 2-2-3-1- Project (4) (Al-Awadey, 2016)

The first design depended on using the waste products of plastic water bottles, buttons, wires and cartoon boxes. The student made a survey on different lighting units, and then applied the design process until creating the recycled 3D model idea as shown in Figure 4-a, 4-b, & 4-c.

**Figure 4-a: Survey and sketches of lighting units**

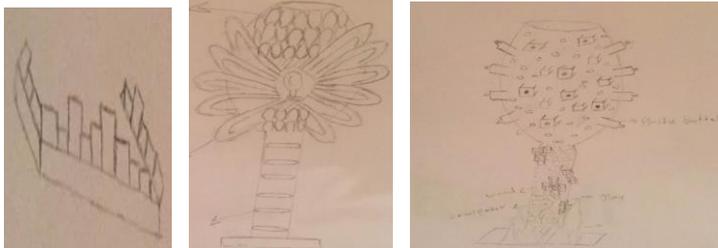
Source: (Design Studio 1: 2015)

**Figure 4-b: Plastic water bottles, Newspaper, Wires, and Cartoon box**



Source: (Design Studio 1: 2015)

**Figure 4-c: Represents the steps of the 1st design idea of lighting unit**



Source: (Design Studio 1: 2015)

### 2-2-3-2 Project (5) (Al- amoudi, 2016)

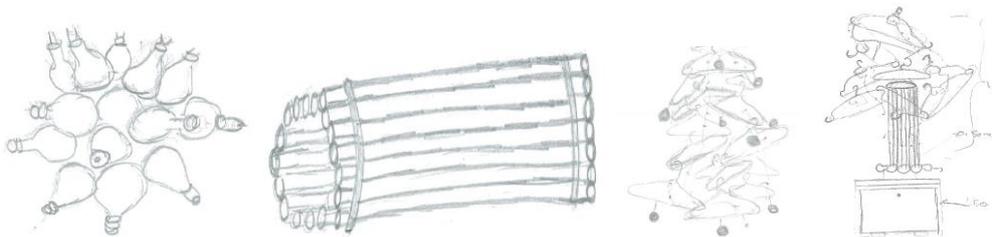
The second design depends on using the waste products of (long florescent lamps, circular tungsten lamps, clothes hangers, cartoon box and broom stick). The student made a survey on different lighting units, then applied the design process until creating the recycled 3D model idea as shown in Figure 3b.

**Figure 5-a: Cartoon box, Clothes Hangers, lamp, and Bloom stick**



Source: (Design Studio 1: 2015)

**Figure 5-b: Sketches represents the steps of the 1st design idea of the lighting unit**



Source: (Design Studio 1: 2015)

### 3- Results and Discussion

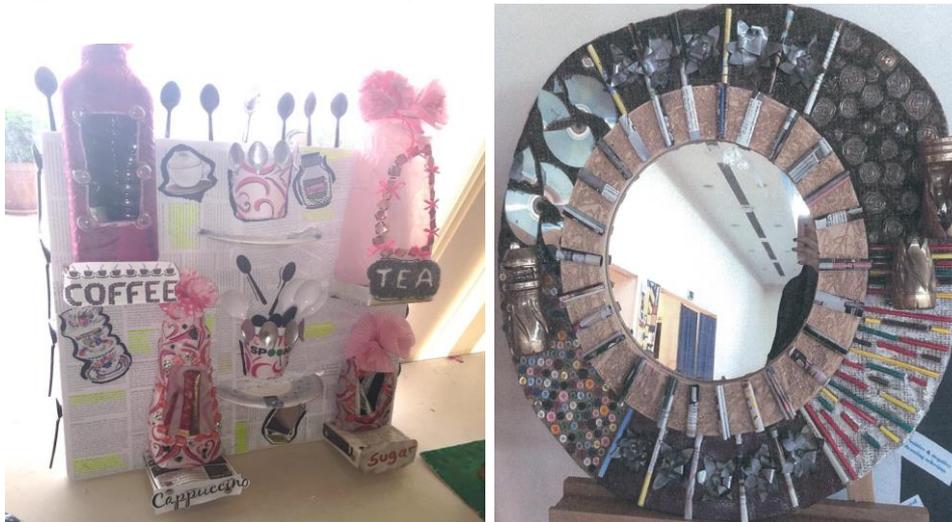
#### 3-1- Project 1: Kitchen Shelves

As shown in Figure 6 on the left, the resulted kitchen shelf unit was suitable for storing coffee, tea, plastic spoons and sugar. The design background was covered with newspapers in the form of vertical and horizontal columns to form symmetrical background. The yellow highlights was for emphasis and to form contrast with the black writing color, pink plastic covers and the white background. The repetition of plastic containers, cups, broken dishes, black spoons exhibited the hierarchy and unity to the design. The stark contrast in color provided alertness, attention, objectivity and clarity to the created idea. (Getty, 2011)

#### 3-2- Project 2 & 3 Wall Mirrors

In the 1<sup>st</sup> design as shown in Figure 6 on the right, the circular glass mirror represents the functional and focal point of the design. The different collected waste elements were arranged in a circular order, representing the different elements of design such as; straight lines represented by magazine stripes, circle represented by the buttons and circular shaped wires, colors and textures which were represented by plastic straw, broken CDs, flowers and Burlap. Rhythm and movement were taken place through the circular arrangement of the different elements, while unity and harmony were occurred via the repetition of the different forms and shapes. Both of contrast and toning in colors enriched the design coloration, where the golden colored glass bottles played an important role to identify the 2<sup>nd</sup> purpose of design as it acts as key stores. (Fehrman, 2004)

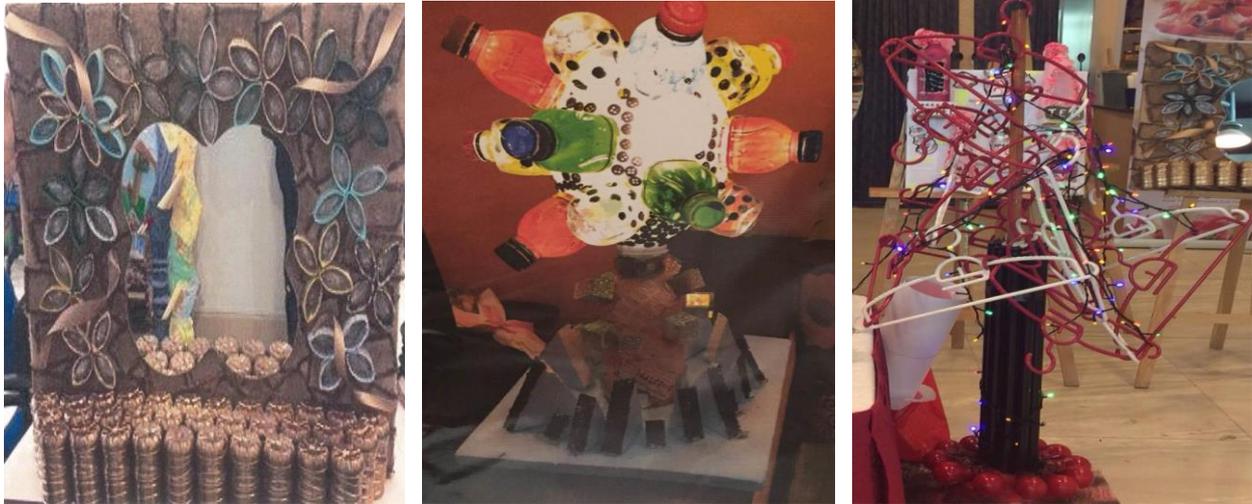
**Figure 6: On the left there is project (1) and on the right there is project (2)**



Source: (Design Studio 1: 2015)

In the 2<sup>nd</sup> design as shown in Figure 7 on the left, the flower shaped glass mirror represents the focal point of the design. Unity was achieved via the repetition of the different patterns clothes' flowers. Balance was represented through the straight lines of the golden plastic water bottles shelf and the circular flowers forms. Texture and pattern in design explained the harmony in the design idea. (Fehrman, 2004; Getty, 2011)

**Figure 7: On the left there is project (3), in the middle there is project (4), and on the right there is project (5)**



Source: (Design Studio 1: 2015)

### **3-3- Project 4 & 5: Lighting Units**

In the first design as shown in Figure 7 in the middle; the contrast in color plays an important role in the lighting condition, exhibit different shadows and hues values. This issue was supported by opaque colors of the black buttons, forming simplicity, harmony and unity. Balance was taken place either through the construction of colored plastic bottles, or through the black triangular shapes from the cartoon box. The rotating red wire around the black triangular shapes exhibited rhythm and movement to the design. (Fehrman, 2004; Getty, 2011)

In the second design as shown in Figure 7 on the right; the cartoon box was applied as a square mold, filled with plaster to fix the broomstick and the red circular tungsten lamps design. The black colored florescent lamps were surrounded the broom stick, which was used to support the hanging of clothes hangers design. The hierarchy, rhythm, movement and balance were observed through the given design. Contrast in color play an important role in producing objectivity alertness and emphasis towards the design. (Fehrman, 2004; Getty, 2011)

## Conclusion

In the design education, the question of; if the teaching methodology must stay the same or can be approached differently, will always rise. However, the answer is so simple, with a world with changing needs and demands, the educational sector must be in constant development, in respect to the changing circumstances. All what is needed is a visionary instructor that can take the traditional courses and evolve with them to new teaching environment that responds to today's needs. In addition, an administration that is open to the development taken place by the courses' instructors. Also, students that are keen and enthusiastic about experimenting and learning in a different way. All these three factors were actually available in this experiment conducted in Design studio (1), the Design Department, at Effat University.

In this studio, the students with the help of their instructor were able to produce many different objects with the same or different main idea. All of these objects, were functional such as; Kitchen Shelves, Wall Mirrors, and Lighting units. Not only that, but they also had their own sense of aesthetics and creativity as was demonstrated, while all are still from recycled materials coming from the students' homes.

This experiment had proven to have good effect even with the social community, during the University day conducted in Effat University, where school girls and their families come to visit the university, they wanted to buy the products they saw. This had a great positive effect on all parties included in this experiment. Thus, the Administration of the university decided to give workshop to school girls on how to create objects from recycled materials. In the end, through this course students were interested, stimulated and inspired to be more creative using the waste materials from their homes, and that is the main aim of design education.

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