

An Analysis for the Effects of Digital Tools on Textile Pattern Design at a Graduate Program^{1*}

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ABSTRACT

Pattern design is the arrangement of a fabric surface with the design elements such as color, form and texture. Today, with a decline in the use of the traditional methods, digital technologies have gained an importance in creating a new language of design. Digital tools provide countless opportunities in the preparation of the detailed drawings and colorings of the pattern designs. Within this dynamic structure, a pattern appears as an important factor in creating a difference and originality in the textile design. The aim of this research is to analyze the effects of digital tools on textile pattern design. Within this context, a design project has been carried out with the practical research method during the Digital Textile Design courses within the master's degree program in the Department of Design, Graduate of Social Sciences, Selçuk University. Textile pattern collections prepared by the students have been examined in terms of their colors, motifs, compositions and designs. Case study method has been used in this research and the findings obtained at the end of the project have been presented in the result section.

Keywords: Digital textile design, Pattern design, Textile surface design

Bir Yüksek Lisans Programı Üzerinden Tekstil Desen Tasarımında Dijital Araçların Etkilerinin İncelenmesi

öz

Desen tasarımı; kumaş yüzeyinin renk, form, doku gibi tasarım öğeleriyle düzenlenmesidir. Geleneksel yöntemlerin giderek azaldığı günümüzde, dijital teknolojiler, yeni bir tasarım dili oluşturmada büyük rol oynamaktadır. Dijital araçlar, desen tasarımlarının detaylı çizim ve renklendirme işlemlerinde sınırsız olanak sağlamaktadır. Bu dinamik yapı içinde desen, tekstil tasarımında farklılık ve özgünlük yaratmada önemli bir faktör olarak karşımıza çıkmaktadır. Araştırmanın amacı, dijital araçların tekstil desen tasarımındaki etkilerini incelemektir. Bu amaçtan yola çıkılarak Selçuk Üniversitesi, Sosyal Bilimler Enstitüsü, Tasarım Yüksek Lisans Programı kapsamında yürütülen Dijital Tekstil Tasarım dersinde uygulama temelli araştırma yöntemiyle bir tasarım projesi gerçekleştirilmiştir. Projede öğrencilerin hazırladıkları tekstil desen koleksiyonları renk, motif, kompozisyon ve tasarım özellikleri açısından incelenmiştir. Araştırmada örnek olay yöntemi kullanılmış, proje çıktılarından elde edilen bulgular sonuç kısmında paylaşılmıştır.

Anahtar Kelimeler: Dijital tekstil tasarım, Desen tasarım, Tekstil yüzey tasarımı

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INTRODUCTION

A pattern is an arrangement of visual elements on a textile surface (Jackson, 2018: 8). It is an aesthetic element created by the method of printing or weaving on textile surfaces (Türkyılmaz and Uzunöz, 2008: 32). It is perhaps the most important factor in making a difference in design. Textiles, which are a part of our lives, have many functions in places as well as our clothes. When textiles are considered as a whole, one of the most important parts of it is the interiors. A fabric, which is an inevitable part of the interior fittings, makes a great contribution to the design with its texture, color and pattern (Yıldırım, 2007: 83). Considering the characteristics of pattern designs, it is possible to say that floral motifs are the most commonly used motifs on the fabrics. It is also possible to see all kinds of other forms, from the realistic approach to the stylization. Fabric patterns are designed with a weaving or printing technique. Printed fabrics include the greatest variety of patterns when compared to the other textile techniques (Özpulat and Yurt, 2011: 29). The researches made for the development of new materials in textiles are important in creating the language of the future design (Akbostancı, 2015: 31). Digital technologies are the final point of the rapidly advancing technology. They are important tools for creating a new language of design. Software programs such as Adobe photoshop and Adobe illustrator provide a great easiness for pattern creation, pattern change, coloring and editing (Bowles and Isaac, 2013: 7, 24). In the digital age, with a decrease in the use of traditional methods, printing and weaving machines also offer unlimited options for applying large and detailed patterns and colors in pattern designs (Colchester, 2007: 184). Within this dynamic structure, designers bring originality and aesthetic value to fabrics.

"In academic programs can we educate

designer-candidates who will be professional designers not only designing commercial goods, but also solving social, ecological, ethical problems by their design skills and knowledge?" (Ovacık, 2015: 47). Based on this question, a design project has been carried out with the research method based on a practice during the Digital Textile Design courses within the master's degree program in the Department of Design, Institute of Social Sciences, Selçuk University. In accordance with the aim of the course, the students were asked to design interior textile patterns. The variety of the original patterns obtained at the end of the project has been highlighted, and the research process, the design process and the course outputs of the pattern design samples have been presented in the findings section.

DATA COLLECTION AND DESIGN METHOD

Qualitative research methods were used and case study chosen as the principal method to obtain data. According to the definition made by Surface Design Association, surface design involves creative discoveries of such processes like painting, coloring, printing, sewing, ornamenting and planking through coloring the fiber and fabric, drawing patterns on them and texturing them (Miles and Beattie, 2011: 90). Practice-based research is a research method performed to obtain original and new information about the practice and the outputs of this practice. Originality and contribution are defined over the produced designs (Ovacık and Gürgan, 2018). "To get a better understanding of how educational design can best be supported and improved, we also need to have some clear ideas about educational design in practice" (Hoogveld et al., 2002; Goodyear, 2005: 91). The aim of this research was to identify the impact of digital tools/ technology on the pattern design and to develop models of digital design activities

in the case study. The study involves the design project arranged within the context of Master's course Digital Textile Design in 2019-2020 Spring semester. The project was carried out by five master degree students. Their digital pattern designs were analyzed according to color, motif, composition, idea sources and design properties. The chart below shows the steps of the design process.

TEXTILE PATTERN DESIGN

A brief review of the past

The way in which an individual, who has been trying to adapt to the changing new world since the Industrial Revolution, express himself and his environment has changed; therefore, new art and design movements have emerged. The first and maybe the most important one of these art and design movements is Arts and Crafts. Art and Crafts emerged as a movement defending craftsmanship against mechanization in England in the second half of the 19th century. The artists and craftsmen, who adopted this movement led by William Morris (1834-1896), expanded the boundaries of manual labor in an aim to emphasize that manual labor is superior to machine production and that it is important to turn to the craftsmanship (Öpöz and Gür Üstüner, 2018: 249). Morris increased the aesthetic level of the craftsmanship in the textile design when mass-production emerged with industrialization, and pointed to the traditional mold printing and hand-woven (Jackson, 2002: 9-14). Morris's system

was based on the craftsmen's applying the high art techniques to decorative arts. In other words, Morris did not exactly use the Gothic design as the neo-Gothic people did before him, but intended to revitalize the old craftsmanship techniques and bring them together with the art. He designed some stylized motifs for wallpapers, seat coverings, curtains and tiles, and mass-produced them using the traditional techniques as much as possible (Frampton, 1996: 44).

Since the late 20th century, the interaction between the fields of science, design and technology has brought a new perspective to the field of art and design. Innovative designers emerging in the late 1980s led the way to benefit from the digital technologies (Doe, 2013: 12), and paved the way for the emergence of the design language of the century. The 21st century has changed the way designers work and produce, and it encouraged them to use the digital techniques as part of the design processes. Designers have transitioned from tradition to innovation, and from craftsmanship to mechanization. This period was called "Digital Age" as a result of the increase in digital innovations (Akbostancı, 2014: 37). Computer-aided design, which is an important stepping stone in the changing design language of the 21st century, has gained speed in a creation process, creating space for experimentalism. Digital printing, although at a low resolution, was started to be used in carpet and upholstery fabric printing in the 1970s, but digital printing also



Chart 1: Digital textile design process

became widespread in garment fabrics as a result of the development of fabric design in parallel with technology from the 1990s to the present day (Uighur and Yüksel, 2013: 16, 17). Digital pattern design covers the process starting from the preparation on a computer or with manual methods to the arrival at a computer printing unit. Today, just like the Art and Crafts movement, craft-based designs are produced by way of digital technologies.

The applications of digital pattern design in a graduate program

Being successful in today's highly technological and globally competitive world requires a person to develop and use a different set of skills than were needed before (Shutea and Becker, 2010). One of these skills is called design thinking. At the very beginning of the design process comes the act of thinking. Creativity is the ability to look at things from a different perspective, to discover the characteristics that distinguish any object from others and to transfer it to the other side with a different interpretation (Kocabaş Atılğan, 2014: 473). At this point, the aim of the digital textile design course is to enable people to make design discoveries using the principles of design and its elements. Creativity is at the forefront of the digital textile design courses. Students are expected to gain the ability to think differently about something that everyone sees the same way. The number of elements used to create a design can be increased and decreased according to the characteristics of fine arts disciplines. Each arrangement in a textile design is made with the design elements such as a line, form, texture, color and etc. These elements, which belong to all branches of art, vary according to the designer's way of thinking and style (Sezgin and Önlü, 1992: 87).

The most commonly used design principle

in textile surface design is repeat. Although color, stain and texture from the design elements and repeat and rhythm from the design principles have come to the forefront in textile design, all elements and principles are part of a whole (Denel, 1970: 64). All kinds of motifs and patterns are used in fabric design, but fashion is shaped according to the age since it is a social phenomenon. In textile design, a phenomenon is used in three ways, which are naturalist, stylized or symbolic. Naturalist and stylized forms are those which have mostly been preferred. Naturalist forms are realistic design objects that are drawn or photographed and transferred to the textile design as they are in nature. Stylized motifs are design objects which have been stylized in accordance with the technique or style of the designer and used in a traditional way (Çağman, 1983: 7). In a design process, colors and forms combine with the designer's emotions, experiences and expectations to create an esthetic product that will attract the user's attention (Keskin and Büyükbayraktar, 2020: 13). This research deals with the inspiration, theme, storyboard, sketch and repeat process which is the initial stage of the design process in digital textile design courses.

DESIGN PROCESS

Research, inspiration and theme

In the initial phase of design, making a research gives inspiration for creativity, shows the ways to open horizons and enables the new ways to be found (Seivewright, 2013: 13). Inspiration is the most concrete step in the creation process for many designers or the designers to be (Krom and Turan, 2016: 30). In the first step, the students conducted some visual surveys on the internet about the art disciplines such as the current events, music, architecture, history and cinema according to their own interests. They prepared archives

by collecting the visual samples by which they were inspired. They then used the visual samples that they selected from the archives and they passed into the next stage, which is the theme selection.

Theme selection

One of the most important stages in design is the theme selection. In the process of creating collections for textile design, the theme selection is carried out considering the sample case and inspiration of the work. Designing a pattern, on the other hand, is one of the methods that many designers use to reflect the source of inspiration. Motifs can be in the form of lines or abstract and concrete surface arrangements. Using advanced computer hardware and software improves the imagination of the designer in a way that s/he can realize it. Original drawings, collages, photographs and even three-dimensional objects can be scanned, manipulated and prepared as repeated patterns (Clarke and O'Mahony, 2005: 91). It was effective for the students to put together the objects such as drawings, photographs, patterns and motifs for the theme selection.

Creating a storyboard

According to the topic of the theme, the students put together and collaged all the elements and visual samples appropriate for the collection. The next step of the study is to prepare the sketches.

Design development and sketches

A composition was created by using the forms of the motifs, which were selected as a source of inspiration while preparing the sketches. The design principles were carefully implemented in the creation of designs (Öngen, 2011: 165). The designs were manually drawn and transferred to Adobe Illustrator CS2020 program. Here, the desired changes and arrangements were made

on the drawings. After the drawings were completed, the coloring process was started.

Coloring

Coloring, which is an inevitable part of a design, can also be performed in digital ways. Color plays a vital role in the coordination of design concepts and digital tools were used to enable color data to be transferred with ease across a range of developing design concepts (Treadaway, 2007: 69). The students provided a balance by using the colors that they used on the storyboards also on their sketches. After the coloring process was completed, they passed into the last step, which is the repeat system.

Repeat system

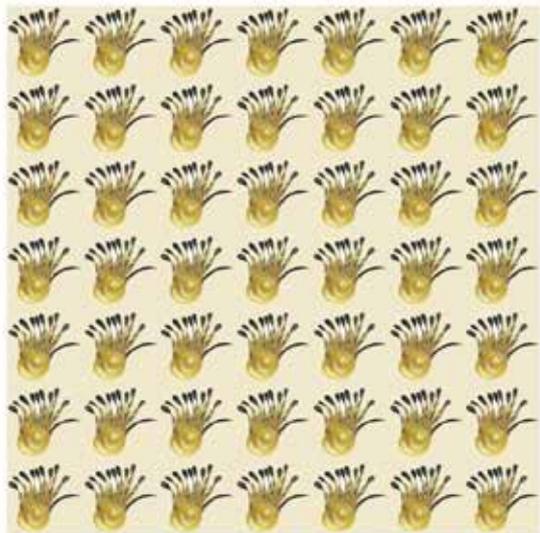
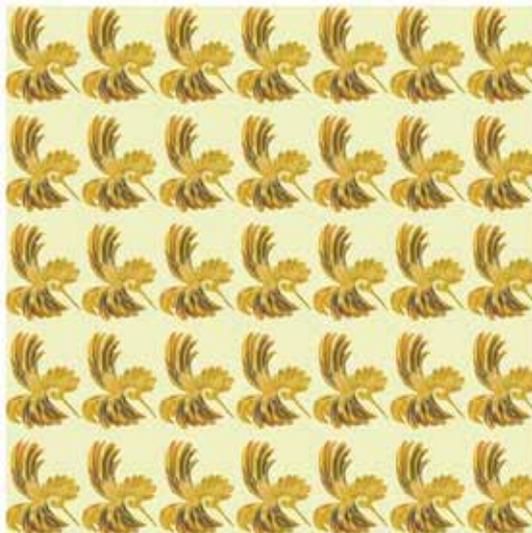
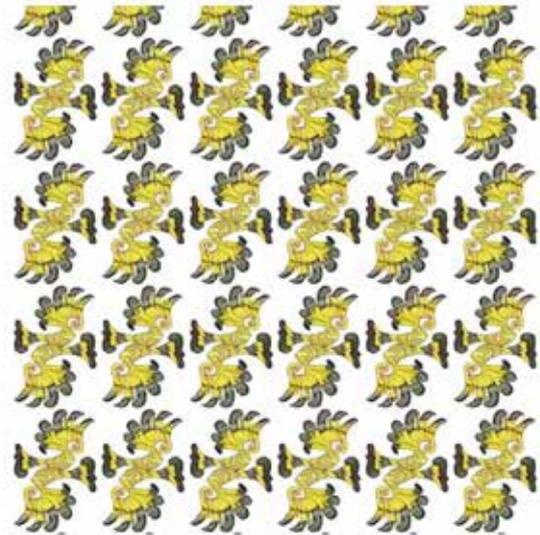
In a fabric design, it is very important that the units that make up the pattern repeat. In addition, a repeat system is used to produce the fabric. This system can change depending on the type of the fabric, the printing and the machine to be used (Yıldırım, 2007: 88). After the digitally designed patterns/motifs were repeated, they were prepared to be sent to the printing press and the project at issue was completed.

Findings

Textile patterns are designs that can be measured both by physical factors, such as a composition, a surface and a form, and by abstract factors such as a thought, emotion and expression. The examples of the digital patterns designed by the students for indoor textiles are as follows.

PATTERN DESIGN NO:1

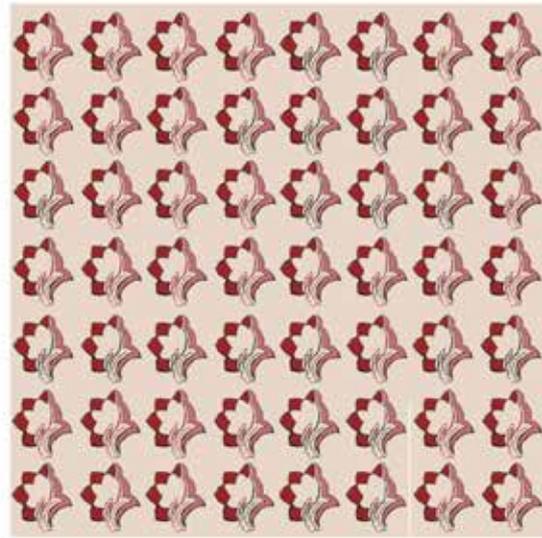
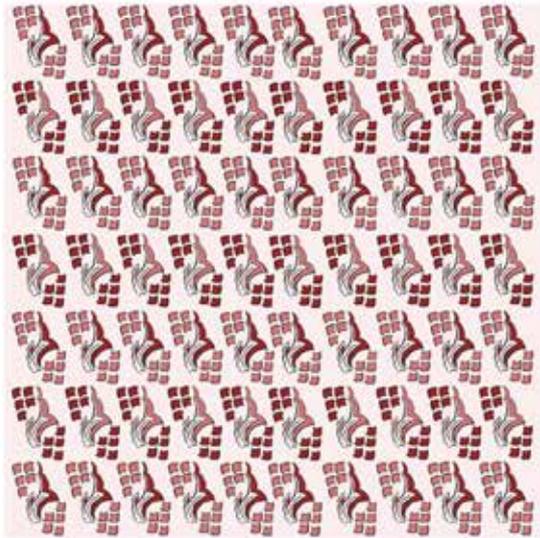
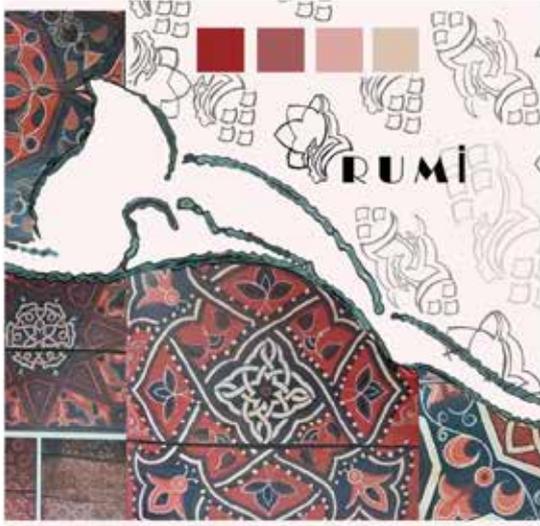
- Theme: Hakikat Tacı / The Crown
- Digital tool: Adobe photoshop CC 2020



- Technique: Digital drawing
- Size: 35 x 35 cm
- Motif: Stylized Hoopoe bird
- Color: Yellow, black, brown, orange
- Composition: Full drop repeat
- End use: Upholstered armchair
- The basic elements of design: Line, form, color, texture
- Design properties: The yellow, black and orange colored figural motifs which are inspired by hoopoe bird are seen on the white and yellow colored surface.
- Designed by Nazmiye Sarıkaya

PATTERN DESIGN NO:2

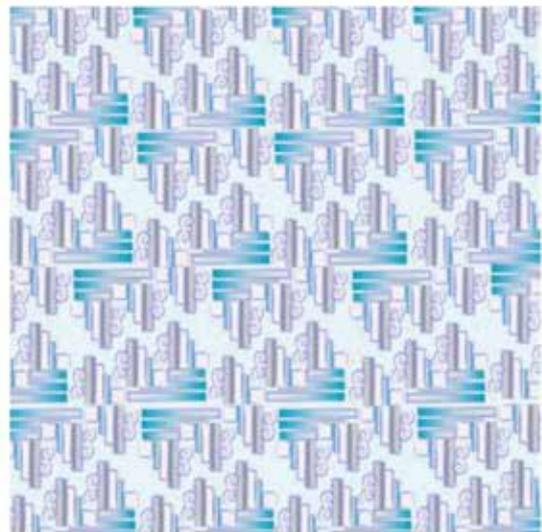
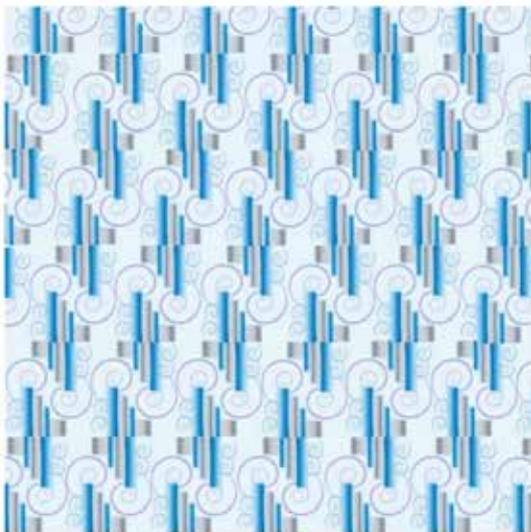
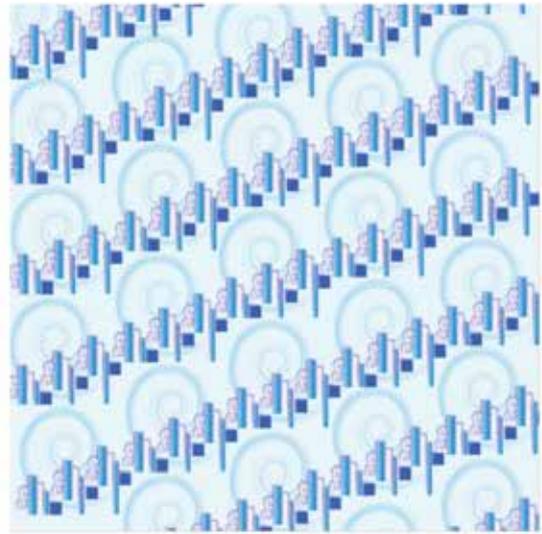
- Theme: Rumi
- Digital tool: Adobe photoshop CC 2020
- Technique: Digital drawing



- Size: 35 x 35 cm
- Motif: Stylized Rumi
- Color: Burgundy, cream, dusty rose, brick colored
- Composition: Full drop repeat, half drop repeat
- End use: Upholstered davenport
- The basic elements of design: Line, shape, color, texture
- Design properties: The cream and dusty rose surface are covered with traditional Turkish motif "Rumi" which is inspired by the tiles of Eşrefpaşa Mosque. Rumi motif is seen on surface as the stylized modern shapes.
- Designed by Naciye Gündüz

PATTERN DESIGN NO:3

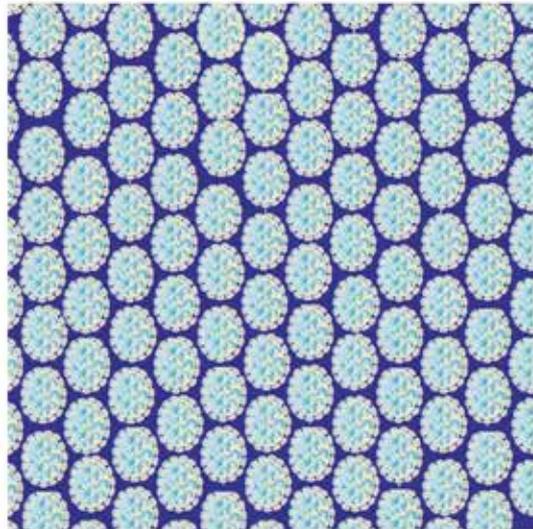
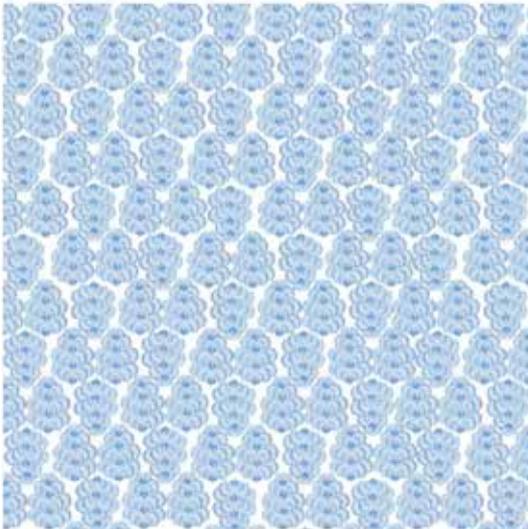
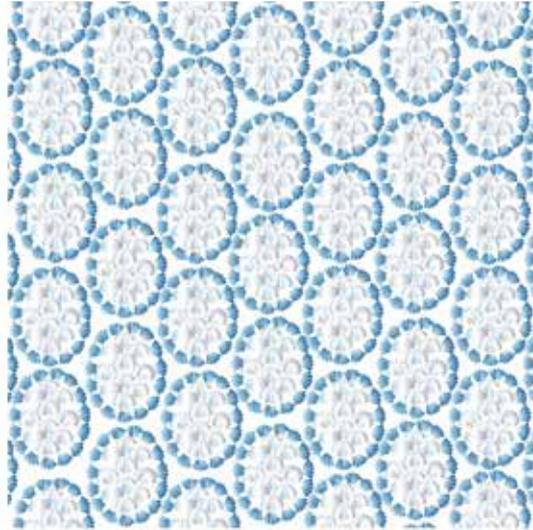
- Theme: Yeni Çağ / New Age
- Digital tool: Adobe photoshop CC 2020



- Technique: Digital drawing
- Size: 35 x 35 cm
- Motif: Lines, geometric shapes
- Color: Dark blue, blue tones, pink, green, grey
- Composition: Full drop repeat, half drop repeats
- End use: Upholstered sofa
- The basic elements of design: Line, shape, dots, color, texture
- Design properties: The design was formed of blue tones, pink and grey colored lines and geometric shapes that are inspired by skyscrapers on the light blue surfaces. The stylized motif represents the New age or digital age.
- Designed by Seher Çelik

PATTERN DESIGN NO:4

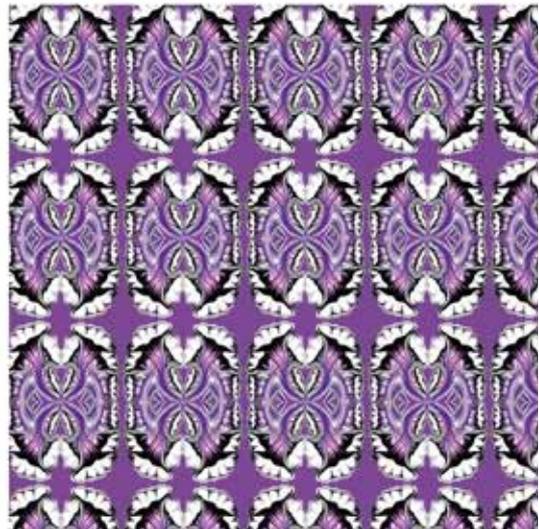
- Theme: Deniz Altında / Under the Sea
- Digital tool: Adobe photoshop CC 2020



- Technique: Digital drawing
- Size: 35 x 35 cm
- Motif: Stylized turtle, seashell, oyster, hexagonal shape
- Color: White, blue, dark blue, cream color
- Composition: Half drop repeat
- End use: Upholstered chair
- The basic elements of design: Line, shape dots, color, texture
- Design properties: The stylized motifs fill in the inside of large hexagonal shapes on the light and dark blue colored surfaces that are inspired by the turtle, seashell and oysters.
- Designed by Selma Yüksel

PATTERN DESIGN NO:5

- Theme: Sabah Gramafonu / Morning Gramophone
- Digital tool: Adobe photoshop CC 2020



- Technique: Digital drawing and free-hand drawing
- Size: 35 x 35 cm
- Motif: Floral motif, Ipomoea flower (kvokkolit)
- Color: Purple, black, white, pink, lilac
- Composition: Full drop repeat
- End use: Upholstered armchair
- The basic elements of design: Line, texture, color, form
- Design properties: The violet colored surface is covered with floral motifs that are inspired by ipomoea flower. Pink, white and purple colored ipomoea flower is surrounded by curlicues.
- Designed by Hülya Veysel

CONCLUSION

This study examines the outputs of the Digital Textile Design course conducted at Selçuk University, Institute of Social Sciences, Design Department master's program. The elements

that make up the designs, such as color, form, pattern and texture vary according to the students' source of inspiration. Each student made 3 designs and there are 15 designs in total. In addition, there are 5 different themes used in the course outputs, which were prepared in accordance with the story topic. All of the designs were prepared with Adobe Photoshop program and the repeat print was made suitable for printing. In this research, a collection suitable for interior textiles was presented as the product output.

When the motifs and patterns of the designs are examined, it is seen that 1 floral pattern (No: 5), 2 animal patterns (No: 1, No: 4) and architectural object patterns were used (No: 2, No: 3). As for the composition properties, it has been observed that the pattern surface was prepared with 5 half-drop repeat system (No: 3, No: 2, No: 4), 1 zigzag repeat system (No: 3) and 9 full drop repeat system (No: 1, No: 2, No: 3). The heavily used colors are blue and the shades of blue, the contours are black, and the colors used on the floor are the light ones. It was suggested that 2 of the designs should be used as armchairs, 1 of them as a chair, 1 of them as a sofa and 1 of them as a davenport upholstery fabric. Lines and colors were used in all of the designs, while forms and shapes were used in 4 designs, dots in 1 design and textures in 4 designs as the other design elements. When compared to the manual applications, the digital technology tools used in the preparation of the designs allowed the students to prepare the motifs, the repeat units, the coloring processes, the storyboards, the collages and the writings more properly.

When the outputs of the course have been compared to the rich productions of the leading designers of the Art and Craft movement, it is possible to see that they are quite insufficient in design even though their source of inspiration are similar to each other.

The most important reason for this is that the students, who participated in the course, did not receive an education in the Fine Arts Faculties, which accept students after the special talent exams have been made. Two of the students received an education in Fashion Design departments and three of them received an education in Traditional Arts and Crafts departments, however, none of them have taken any courses in Textile Design before, and they have never made any pattern design manually or on a computer. In this respect, they have made limited use of digital tools while producing the patterns. Another problem is that the courses were carried out face-to-face in the first four weeks and as a distance education in the other weeks. It has been observed that all these conditions caused the students' designs to be inadequate.

In addition, it is understood that there is a lack of practical courses in the Design master's program, as the number of the theoretical courses are more than that of the practical ones. As a result, the Digital Textile Design courses, which aim to fill this gap, provided the students with the basic knowledge of the textile pattern design. As an answer to the question given at the beginning of this article, it is possible to say that the fields of sociology, ecology and ethics raise the awareness of the students even though it is not clearly understood from the designs.

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