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Modern Arabic Typeface Fonts Design and their Impact on the Development of Creative Ability for Graphic Design Students

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Abstract

The design of Arabic typefaces is one of the most crucial elements in visual communication. It provides graphic designers with a powerful visual language for their designs. In this respect, it plays an effective role in establishing intellectual connections and solidifying the symbols of visual identity in modern Arabic letter design.

This research aims to investigate the academic development level of graphic design students through the process of designing Modern Arabic typefaces to enhance their designs. Furthermore, it aims to analyze the most significant formal, expressive, and technical features involved in Arabic typeface design. Significantly, it addressed the criteria for designing modern Arabic typefaces. The research methodology involved the analysis of samples of modern Arabic typeface designs created by students in the Graphic Design Department at Al-Ahliyya Amman University in Jordan. The results confirmed the academic progress of graphic design students who added modern and diverse typefaces to the digital library, contributing to the enrichment of digital content. This underscores the importance of teaching Arabic typeface design in all graphic design departments and emphasizes the artistic and aesthetic elements of modern Arabic typography design. These elements play a significant role in engaging the audience with distinctive Arabic graphic designs.

Keywords: *Arabic typography, graphic design, creative abilities, Arabic typeface design, educational outcomes.*

Introduction

Arabic typography serves as the primary mode of visual language for communication (Abu-Shaqra, 2012). In this respect, Arabic typefaces are the third most widely used globally, with approximately 660 million people using Arabic text for communication (Pariona, 2022). The Arabic language is known for its rich vocabulary, exceeding 12 million words, and its intricate calligraphy and writing, encompassing the art of lettering and related tools and techniques (Al Harahsheh, 2011).

Islamic art contains many visual graphic elements such as Arabic calligraphy.

(Hana'a M. Hijazi, 2023)

In this context, Arabic calligraphy is an integral part of Islamic culture (Ali Azzaari, 2020), characterized by its connected nature (Khan, 2020), making it adaptable to various geometric forms, including curves, elongations, interlacing, embellishments, rotations, compositions, and interweaving (Abdel Qader, 2019).

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The histories and practices of Arabic calligraphy and Arabic typefaces are richly intertwined (J.R. Osborn, 2009).

The design of Arabic typefaces can be traced back to two primary origins: the straight and the circular, which often challenges graphic designers when making typographic decisions. However, there remains a significant deficiency in the design of Arabic typefaces and their utilization in print designs (Asaad, 2020).

Significantly, Arabic calligraphy has thrived and unleashed the creative potential of Muslim artists who skillfully shape Arabic letters with remarkable fluidity, unique formations, and endless compositions (Asaad, 2020). Those who contemplate Arabic calligraphy are captivated by its rhythm, aesthetic clarity, and distinctive geometric structure. It bridges the worlds of the East and the West, becoming a realm that many cultures using Arabic letters traverse. These artists delve deep into the realm of Arabic letters, departing from their well-known classics, to present the world with a contemporary interpretation of Arabic letters as visual symbols bearing cultural connotations, making Arabic calligraphy one of the highest forms of Islamic art (Asaad, 2020).

Arabic typeface design is a relatively new specialization, and it requires standards and guidelines to reach maturity. In this respect, some studies have introduced terms for the anatomy of Arabic typeface design, with some derived from Kufic script and others from Naskh script. However, there has been a lack of focus on developing a curriculum to elevate the skills of graphic design students in Arabic typeface design. Additionally, there is a shortage of academic literature regarding classification methods for Arabic fonts.

Needed to restructure design approaches in the region in a more innovative way while keeping pace with international standards. There is a growing interest in experimental Arabic typeface among graphic designers and visual artists (Sleiman& Lama 2016).

While the recent years witnessed an increase in literature exploring the history of Arabic typography and its utilization in graphic designs, there have been few studies which examined the application of student learning activities to enhance their creative abilities in designing Arabic typefaces.

Lack of emphasis on typography during the academic stage in most Jordanian universities, and its improper teaching to graphic design students, negatively impacts designers and their experience (Bara & Huria, 2018)

Therefore, this study is structured around three main pillars. Firstly, it involves an analysis of previous studies. Secondly, it assesses the creative aspect of students' ability to design professional Arabic typefaces. Lastly, it designs a survey to measure the learning outcomes of graphic design students after engaging in an educational activity related to Arabic typeface design. It also examines the impact of this activity on the development of their creative abilities, including their capacity to design Arabic typefaces and how they use these typefaces. This is accomplished by identifying methods for dissecting Arabic-type characters and studying samples of work produced by graphic design students at Al-Ahliyya Amman University.

Literature Review

The aim of reviewing past literature and cumulative experiences in Arabic typeface design is to make the most benefit of research. Many studies are based on the design of Arabic Typefaces.

Musa's study (2008) aims to create a methodology for using modern technologies in designers' work. He also aimed to produce new Typefaces in multiple formats that meet the needs of digital systems. The researcher indicates in his study that there is a

significant lack of documentation and analysis of the bases of designing and producing Arabic Characters.

The study by Hosseini et al. (2009) emphasizes the lack of researches and studies on the design of Arabic Typefaces, and the difficulty of compatibility on standards for the design of computer-based Arabic Characters due to the difference in alphabets bases depending on the variety of typefaces. The study suggests relying on the idea of generating Characters that is, deducting letter designs from each other in addition to the process of dividing the letter when designing, such as the letter (ف), which consists of the head of the letter (و) and the body of the letter (ب). The study also confirms the principle of dividing the parts of Arabic Typefaces into basic original letters, which are the letters { أ, ب, ج, ذ, ر, و, ن}, and other secondary extracted letters, represented by the rest of the letters where the basic letters can be built first, and then the secondary letters can be extracted from their design components.

In their study, Raheima and Ahmed (2012) also strive for a new relationship between the Kofi manual Typefaces, and the computer-programmed craft technique. The study emphasizes dividing the parts of Arabic Typefaces into original, basic, and secondary extracted letters, where the basic letters can be built first and the secondary letters can be extracted from their design components. The study also suggests practical design phases, which begin with the letters' manual design and then computer use.

Amir and Manning (2012) tested the simultaneous reactions of a group of students consisting of 102 males and females where they presented a set of 36 Latin Typefaces. The results confirmed the reciprocal relationship between the characteristics of specific fonts (diversity vs. contrast vs. pattern). Research into designing an Arabic font for the College of Arts... Hussam Al-Qur'an - 366 - with specific emotional standards (pleasure vs. excitement vs. focus). The study indicates that each of the participating Typefaces / fonts has a character associated with its design that affects the reader emotionally. The study is limited to Latin fonts and is conducted in the United States of America.

The study of Jordan Timothy et al. (2017) aims to demonstrate that Arabic typefaces, which are similar to Latin fonts, contain characteristics and features that reflect the personal qualities of each font, such as strength, sophistication, romance, humor, and others. The study found that the design of specific Arabic Typefaces necessarily reflects certain implications generated by the font's visual structure and holds the characteristics that determine its essence and distinction.

In his study, Ali (2013) aims to authenticate the applicability of the principle of unity in designing Arabic letters (heading line) and to demonstrate the importance of enduring the design's foundations for designing Arabic computer Typefaces. The study concludes that it is possible to achieve unity in the design of electronic Arabic letters for a font by adopting a key design template for a letter and then performing identical and axial copies of the template on the rest of the letters using computer software.

Al-Siddiq (2017) concludes that there is a problem represented by the lack of specific foundations and standards governing the invention of Arabic Typefaces. It is also found that there are insufficiencies in Arabic Typefaces in terms of aesthetics and functionality. He calls for attention to the functional role of fonts, represented by clarity and readability.

This research is considered the first study that relies on the teaching and learning methodology among graphic design students in learning to design a new computer-based Arabic Typeface that suits the requirements of the target group.

objectives and applied research methods:

An analysis of a sample of students' work in designing Arabic typographic fonts professionally was applied mainly to investigate the creative aspect of students' ability to design professional Arabic fonts, Moreover, an evaluation of multiple variables was done,

and it included the design side of Arabic typographic fonts, the applied side of fonts in graphic design, and learning outcomes.

Methods:

This study's design involves the analysis of a sample of the outputs of students' design projects according to the standards of typographic design. Furthermore, it adopted a qualitative approach through observation and descriptive analysis of samples of Arabic typeface design projects for graphic design students at Al-Ahliyya Amman University. A questionnaire analysis was also designed to measure the effectiveness of the educational output for typography design among students in terms of designing modern Arabic fonts and applications of Arabic typeface in designing graphic learning outcomes of modern Arabic typographic design for graphic design students. Besides, the five-point Likert system was used due to its suitability to the nature of that study.

Research Objective

- To investigate the development of the creative aspect of students' ability to design professional Arabic fonts
- To assess the standards for designing modern Arabic typographic fonts
- A comprehensive evaluation of various variables, encompassing the design aspect of Arabic typography, its practical application, and learning outcomes in the activity of designing Arabic typefaces for graphic design students

Research Procedures

- An analysis of a sample of students' work in designing Arabic typographic fonts professionally
- Applying typographic design standards in students' work
- Designing a questionnaire to measure the design and applied aspects, and learning outcomes in the activity of designing Arabic typefaces for graphic design students

Theoretical Background of Arabic Typeface Properties

A typeface is a collection of letters. In this respect, each letter is unique, so certain shapes are shared across letters. Significantly, a typeface represents shared patterns across a collection of letters. Typefaces that are selected for their style, legibility, and readability are most effective when following the fundamental principles of typographic design.

The evolution of Arabic letter anatomy

The Arabic script is rich in aesthetic and artistic values that reflect aspects of Islamic thought in its abstract form. Furthermore, this script is the essence and core of Islamic art (Alashari, 2021).

Throughout its history, the Arabic calligraphic script has undergone two fundamental reform processes:

The first process: A content-based reform resulted in an increase in diacritics and vocalization marks to standardize the Arabic language in the tongue of non-Arabs due to the Islamic conquests, a process initiated by Abu al-Aswad al-Du'ali.

The second process: It was a reform in the form of the Arabic letter itself, leading to the standardization of Arabic script, the structuring of its composition, and the formal balance

and regulation of its shapes. This process was carried out by Yahya ibn Ya'mur and Nasr ibn Asim during the reign of Caliph Abd al-Malik ibn Marwan (Alashari, 2022).

The Emergence of Printed Arabic Script

The printed Arabic letter emerged in Europe, and it dates back to 1489 in the city of Mainz, Germany. In this context, a Dominican friar named Bernaed de Berydenbach wished to describe the city of Jerusalem upon his return from a journey to the East. His journey resulted in the first printed European book that included Arabic letters. This marked the start of using Arabic letters at the beginning of Latin books that discussed Arabs or the Arabic language, aiming to simplify the reading of names and terms (Sadeed, 2012).

Creative Abilities

Franken refers to creativity as the proclivity to produce or acknowledge original work and ideas that have value for a special purpose, including academics, entertainment, communications, the arts, or in any given field or discipline (Franken, 1998). In this respect, creativity is perceived as the need to solve encountered problems, communicate a set of ideas or values to others, or inject a modicum of motivation and stimulation to generate desirable changes in a given domain.

The use of creative thinking is a communicative ability, skill, and vision through which students motivate each other (Zenko & Mullig, 2011), to improve the creative process in graphic design.

Arabic digital calligraphy design:

The starting point for every study of the lineage of Arabic calligraphy is the letter 'أ' (alif /a/), which is the reference for all other letters, as it is measured in points (Yaghan, 2020). The main characteristics of the new body text typeface have to emphasize the importance of clarity (Abdalla, 1997). Many studies on Arabic calligraphy, such as the concept of metrics found in calligraphy guides, have been applied to different aspects of Arabic digital printing. In this respect, Bayar and Sami discussed the basis for a dynamic font design that applies dynamic stretching of characters and the use of vertical and horizontal ligatures according to calligraphic rules (Abdelouahad & Khalid, 1997).

Modern Arabic typefaces is designed based on family weights, which can go up to ten weights, including light, regular, medium, bold, and black. These fonts are created to have a contemporary appearance, combining aesthetics and readability. In this regard, Arabic typefaces pair well with Sans Serif Latin fonts and are suitable for use in visual identities and various graphic designs, especially in titles and printed materials.

The use of Arabic typography beyond the Arabic language itself, particularly in academic studies of Islam, began about a century after the emergence of Latin movable type printing. This delay was due to Johannes Gutenberg, the inventor of movable-type printing, not considering Arabic script when developing printing techniques. Arabic script consists of 28 letters, each with four forms: isolated, initial, medial, and final, as shown in Table 3. This necessitated the creation of a large number of letterforms, making the process time-consuming (Abdullah, 2012). In the contemporary era, computers have made it much easier for us to communicate in Arabic without the need to consider the various letterforms (MarwaJadallah, 2020).

The selection of the study sample aims to investigate how graphic design students interact with the standards and methods for developing Arabic typeface design. The students' designs represent the potential for performance improvement, educational outcomes, and the creation of modern creative solutions for Arabic typefaces design. In this respect, computers have provided numerous features for enhancing Arabic typefaces and addressing challenges and limitations that existed before the computer era when Arabic typefaces as movable typefaces did not meet aesthetic standards compared to

traditional handwritten Arabic scripts (Ali, 2018). Geometric analysis has also been used in Arabic calligraphy (Jahama, 2023).

Design process:

Modern Times Typography Matchmaking has generated new aesthetic values for Arabic typography derived from Latin fonts through the design of characters and their compositions (Hassan, 2016).

The design process serves as the step-by-step approach followed in the creation of Arabic typefaces. It begins with a company's need for custom typefaces and culminates in the final design. Significantly, it forms the scientific foundation and the method employed in typeface design. When searching for unique typeface designs, it becomes evident that innovative design concepts underlie them. Innovative design concepts are what give a design its distinctiveness and set it apart from other designs. The design concept can be considered the narrative of the design work, telling its purpose, reflecting its circumstances, and engaging users. Consequently, it mirrors the designer's thought process and their self-reference. But the design concept doesn't end at the design stage. Rather, it extends into the execution phase. Therefore, when applying the concept, all elements of Arabic character design harmonize to serve the idea, enriching each element through careful selection (Al Rawi, 2011).

Standards for designing the facets of the Arabic digital letter

Looking at the Arabic fonts that are abundantly available in the typography arena, we find at least a few of these fonts that adhere to the correct design rules:

First: The design of the line must be subject to the correct design rules in terms of the balance of mass and space, and the harmony between the parts of the design, to the last known design rules. It is not correct here to say beauty is not subject to law but rather is subject to many flaws, as we see in the greatness of God’s creation. Glory to God!

Second: The design must be subject to the general rules of Arabic calligraphy, especially in terms of synthesizing letters from each other and other well-known rules, of which Kufic script is always the main reference for these rules (Al-Rawi, 2011).

Third: The quality of implementation and correct programming of the line.

Fourth: Taking into account the design of the user's culture in terms of line orientation.

Several conditions must be taken into account in developing the shape of the letter, the most important of which are:

- Taking into account the economic aspect of designing Arabic fonts.
- Taking into account the geometric beauty of the letter (ratio).
- Ability to read and avoid pronunciation errors (easy to read).
- Adhere to the rules of Arabic calligraphy to ensure its beauty.

The ideal typographical Arabic alphabet must have the following formal characteristics:

- It must avoid shapes with unfamiliar shapes (because unfamiliar shapes read slowly).
- Legibility which is the ability to see a letter or word and be able to identify it easily.
- Readability which is the ability to easily get the meaning of speech and continue reading.
- Appropriateness which implies that the letter must be created in a way that is appropriate for the reader, the message it is intended to convey, and even the type of

paper it will be printed on. (Al-Sayyid, 1994, p. 44). Fig. 1 below provides an example of above listed characteristics.

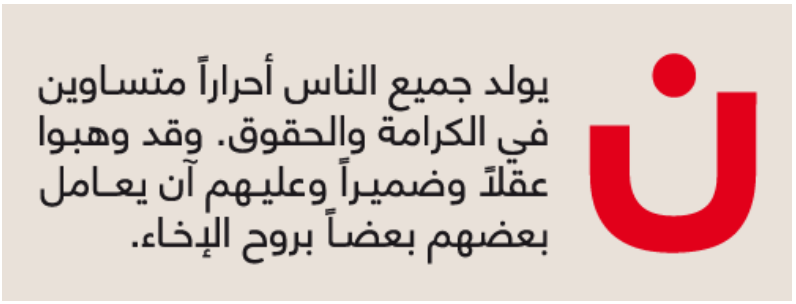


Fig. 1: The “Neue Helvetica Arabic” font.

Sample text, designed by Nadine Shaheen

Source: https://2u.pw/khoTI

Theoretical Background of the Arabic letter

-The functional value in designing the faces of the Arabic letter

In the past, Arabic calligraphy was used primarily as a script for writing the Quran. However, as Arabic calligraphy tools evolved and calligraphers emerged in Baghdad, Arabic calligraphy began to be used in titles and as an art form. The role of Arabic typeface design became associated with design parameters related to the nature of its usage. Arabic typefaces, in general, are used either as headline fonts or body text fonts. We find the relationship of the part to the whole This relationship means the method in which the design achieves the relationship of the parts with each other and with the design whole (Hassan, 2023)., as shown in Figure 2. These types of fonts will be the focus of this research due to their significance in graphic design

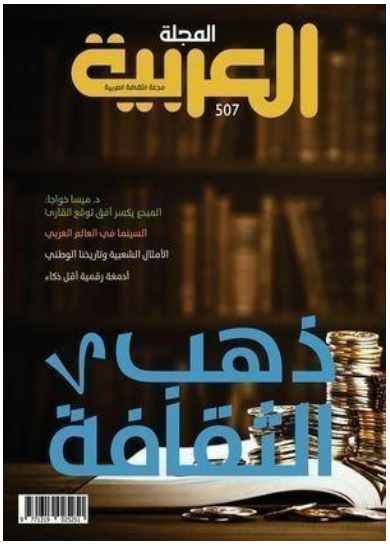


Fig. 2: Cover of the Arabic magazine (Title Font)

Source: https://www.arabicmagazine.net/arabic/2023/9/9

-Aesthetic value in designing aspects of the Arabic letter:

The Arabic writing system is a conjoined right-to-left script that can include up to four forms of a single letter (Szell, 2012). It is characterized by aesthetic values which are the mathematical language or numerical translation through which the designer arrives in the field of designing the aspects of the Arabic letter to form the various constituent and interdependent relationships to achieve the greatest degree of consistency between the

letters and some of them reflect the communicative and intellectual dimension of the design, as is shown in Figure 3. The design process achieves its goals according to laws related to visual perception. In addition, the Arabic typographic font has the feature of aesthetic formation, such as its use in artistic paintings and the design of Arabic logos.

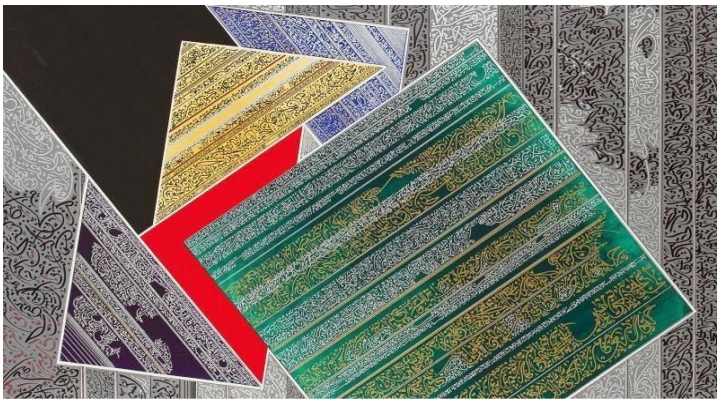


Fig. 3: Artwork by the Tunisian calligrapher designer Naga El Mahdaoui

Source: https://2u.pw/NYVCU2022/6/1

An Applied Study for the Design of Arabic Letters for Graphic Design Students at Al-Ahliyya Amman University:

A program has been developed for students to train in the design of Arabic typographic fonts according to a vertical mechanism based on three axes.

The first is the design idea of the project according to the rules of Arabic calligraphy design, where the four letters form the single, the beginning, the middle, and the end. In the Arabic language, there are letters above the baseline and other letters that fall below this line such as: (ج ح خ ع غ م ر ز ل و س ش ص ض ق). These limits can be set to serve Arabic calligraphy, such as:

- Make a baseline for drawing the letter.
- Set x-height to specify the maximum height of the point position.
- Set the cap height to be the maximum value of the upper formation position.
- Make both ascender and descender take the appropriate value for the rule of the letter as a whole.

Training on drawing letters in Illustrator

- Isolated Form (ص , س , ر , د , ج , ب , ...).
- The letter at the beginning of the word Initial Form (عـ , صـ , سـ , جـ , بـ ...).
- The letter in the middle of the word Medial Form (ـصـ , ـسـ , ـجـ , ـبـ ...).
- The letter at the end of the word Final Form (ـص , ـس , ـر , ـد , ـج , ـب , ـا ...).

Table 1 below shows the Arabic alphabet in different positions.

Table 1: The Arabic Alphabet in Different Positions

Source: (Abdullah, 2012)

Name	Isolated	Initial	Medial	Final
Alif	ا	ا	ـا	ـا
Baa	ب	بـ	ـبـ	ـب
Taa	ت	تـ	ـتـ	ـت
Thaa	ث	ثـ	ـثـ	ـث
Jeem	ج	جـ	ـجـ	ـج
7aa	ح	حـ	ـحـ	ـح
7haa	خ	خـ	ـخـ	ـخ
Daa	د	د	ـد	ـد
Thal	ذ	ذ	ـذ	ـذ
Raa	ر	ر	ـر	ـر
Zaa	ز	ز	ـز	ـز
Seen	س	سـ	ـسـ	ـس
Sheen	ش	شـ	ـشـ	ـش
Saad	ص	صـ	ـصـ	ـص
Dhaad	ض	ضـ	ـضـ	ـض
6aa	ط	طـ	ـطـ	ـط
6haa	ظ	ظـ	ـظـ	ـظ
Aeen	ع	عـ	ـعـ	ـع
Gheen	غ	غـ	ـغـ	ـغ
Faa	ف	فـ	ـفـ	ـف
Qaaf	ق	قـ	ـقـ	ـق
Laam	ل	لـ	ـلـ	ـل
Meem	م	مـ	ـمـ	ـم
Noon	ن	نـ	ـنـ	ـن
Haa	ه	هـ	ـهـ	ـه
Wow	و	و	ـو	ـو
Yaa	ي	يـ	ـيـ	ـي

The generation of characters, some derived from others, solves some of the design challenges of Arabic characters based on various aesthetic and artistic principles and rules that rely on common features among the letters. (Hassan et al, 2017)

A visual comparison between Archaic Kufic and English Grotesque will show similarities (Taha, 2015)

The applied part of this study targeted the course outcomes (Arabic calligraphy and decoration), which are part of the graphic design program plan for the first semester, academic year 2021-2022. The number of students in the division was (25). Two projects were worked on aspects of Arabic calligraphy in this course, with a design rate of two typographic integrated Arabic fonts, the first is built according to the base of the rectangle with a ratio of 0.5 to 1 cm in width and 6 cm in height, while the second font is based on the base of Arabization of the company's Latin font to devise an Arabic font that shows Fig. 4.

The Arabic typography is from the Latin masquerouge italic font (address line), and the student employs the font in graphic designs; see Fig. 5.

Fig. 4: Arabic typeface design

From the Latin masquerouge italic (Title Font)

Source: Student Rawand Huzayen

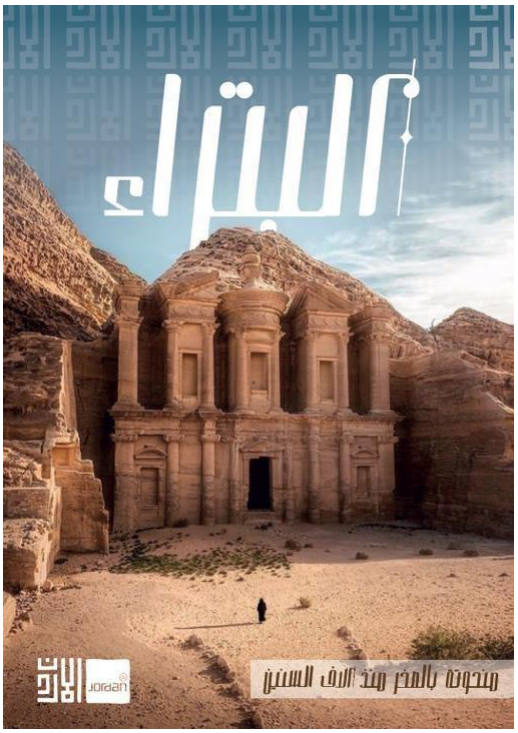


Fig. 5: Applications of Arabic typeface from

the Latin font masquerouge italic - (Title Font)

Source: student Rawand Huzayen

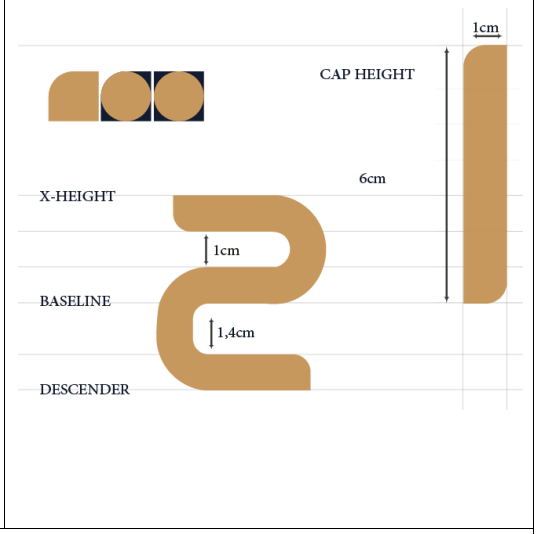
The first project:

Three samples of students' work were selected as case studies in the first project, which is based on the rule of using a rectangle with a height of 6 cm and a thickness ranging from 0.5 cm to 1 cm, to begin the stage of developing different solutions for that rectangle,

especially the head of the rectangle, which represents the base of the upper end of the letter 'أ' (alif /a/). To be the basis on which all aspects of Arabic typefaces are derived, this research contributes to developing the capabilities of graphic design students at Al-Ahliyya Amman University. This is done through studying many samples and working on analyzing them to show the extent to which the standards for designing aspects of Arabic letters are applied, as they are is reflected in the enrichment of electronic Arabic academic content. Table 2 below shows details of the first project sample.

Table 2: First project sample

Source: student Hanan Majed Abu Rasa

<table>
<tr>
<td>
</td>
<td> 
</td>
</tr>
<tr><td>Student</td><td>Hanan Majed Abu Rasa</td></tr>
<tr><td>Design Dimensions</td><td>The design of Arabic typeface in this sample depends on the rectangle with a width of 1 cm and a height of 6 cm and the adoption of an angle of 90 degrees at the upper end, as well as the adoption of the circular shape resulting from the horizontal line and the vertical line at the top and bottom of the rectangle. The circular shape also represents the base of the horizontal letters of the line.</td></tr>
<tr><td>Font Design Functional Values</td><td>Heading font: It is used in the design of magazine covers, internal headlines, and large advertising posters.</td></tr>
<tr><td>To design the font</td><td>The ad is large</td></tr>
<tr><td>Aesthetic values of calligraphy design</td><td>It relied on the values of contrast between the sides of the letter, especially the 90-degree angle and the circle, which gave the letter a smooth shape in the outer fonts. The weight of the font is normal.</td></tr>
<tr><td>Source</td><td>Course (Arabic calligraphy and ornamentation) first semester, 2021-2022</td></tr>
</table>

Analysis of the first project sample

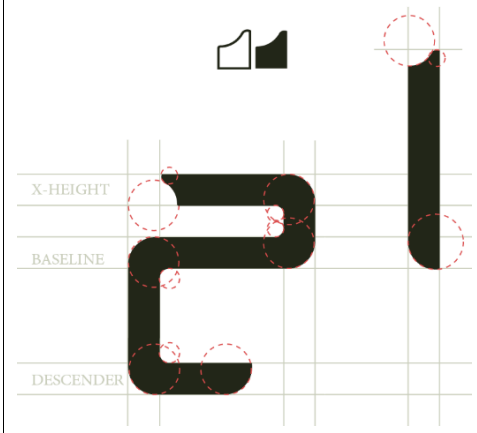
Through the study of the first sample, it is clear that the student adheres to the rules of designing the faces of Arabic typographic characters, as the design is obviously consistent with its employment in graphic designs. It also reflects the possibility of programming the font through typographic font building programs such as font creator and font lab studio. We also note that the student adhered to the standards of geometric beauty in building the

typographic font. Besides, the font was readable. This necessitates the application of the criteria for designing the Arabic typographic font. Table 3 below shows details of the first project sample.

Table 3: Second project sample

Source: Student Roqaya Musleh

<table>
<tr><td colspan="2">


</td></tr>
<tr><td>Student</td><td>Roqaya Musleh</td></tr>
<tr><td>Design Dimensions</td><td>The design of the faces of the Arabic characters in this sample depends on the repeated square with a number of 6, with a width of 1 cm and a height of 6 cm, and the adoption of two different sizes of the circular shape in the rotation of the letter at the top of the ‘أ’ (alif /a/), and the rest of the letters are derived according to the rule of visual identity.
The 90-degree angle at the end of the lower millennium is a basic pillar, depending on the semi-circular shape of the other part of the lower end of the millennium.</td></tr>
<tr><td>Font Design Functional Values</td><td>Heading font: used in the design of magazine covers, internal headlines, and large advertising posters</td></tr>
<tr><td>Aesthetic values of calligraphy design</td><td>The homogeneity between the sides of the letter, especially the angles of 90 degrees, was relied upon, which gave the letter shape stability in the vertical and horizontal external lines. The weight of the font is normal.</td></tr>
<tr><td>Source</td><td>Course (Arabic Calligraphy and Decoration): First Semester, 2021-2022</td></tr>
</table>

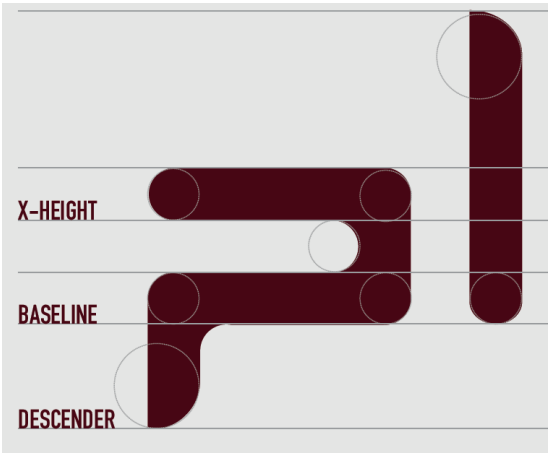
Analysis of the second project sample:

The analysis of the second sample reflects the student’s ability to create according to the zero-based rule, which involves constructing characters using a rectangle shape with a width of 1 cm and a height of 6 cm, maintaining a 90-degree angle. The student adhered to the design rules of Arabic typefaces, aiming to achieve visual harmony, and followed geometric principles in constructing the typeface, resulting in excellent legibility. The design also adheres to the aesthetic standards of Arabic typeface design. Furthermore, the typeface can be easily transitioned to the next step, which involves programming the typeface to make it a computerized font ready for use in modern graphic designs. Table 4 below shows details of the first project sample.

Table 4: Third project sample

Source: Student Rawand Huzayen

<table>
<tr><td colspan="2">


</td></tr>
<tr><td>Student</td><td>Rawand Huzayen</td></tr>
<tr><td>Design Dimensions</td><td>The design of the faces of the Arabic typefaces in this sample depends on the circle with a diameter of 1 cm and a height of 6 cm, the adoption of an angle of 90 degrees at the upper left end of the letter ‘أ’ (alif /a/), the adoption of the resulting circular shape as a base for the letter ‘أ’ (alif /a/) and the ends of the typographic letters in the sample.</td></tr>
<tr><td>Font Design Functional Values</td><td>Heading font: It is used in the design of magazine covers, internal headlines, and large advertising posters.</td></tr>
<tr><td>Aesthetic values of calligraphy design</td><td>It relied on the homogeneity between the sides of the letter, depending on the shape of the circle, which gave the shape of the letter stability in the external vertical and horizontal lines. With the presence of straight lines in parts of the typeface design, the weight of the font is normal.</td></tr>
<tr><td>Source</td><td>Course (Arabic calligraphy and ornamentation) first semester, 2021-2022</td></tr>
</table>

Analysis of the Third sample:

The study included some methods that can be used to develop students' creative abilities. (Aldeen & AlJundi, 2021) This sample confirms the student’s ability to be creative and create an Arabic calligraphy design according to the rule of building the letter by dispensing with the main tooth at the beginning of horizontal letters such as baa(ب), Taa (ت), and Thaa (ث), while it appeared strongly in the letters sein (س) and (ش) shin. This reflects an updated vision from the student in the field of experimentation to reach a new, different form of typographical font, taking into account the rules of designing the faces of Arabic typographical characters, where the design comes to achieve visual harmony and the font can be programmed through typographic building programs. It is also noted that the student adhered to the standards of geometric beauty in constructing the typographical font. In this respect, the legibility of the font is distinct, and this makes the font employable, whether as a title font or in designing the visual identity of companies in the Arabic language.

Through the analysis of the samples, we find that the selected graphic design students were able, through their design experience, to deal with the difficulties of designing Arabic typefaces which stem from its special rules in design governed by the correct understanding of the dimensions of the design form of the alphabet and the special rules, for example:

- Multiple forms of one letter in Arabic calligraphy.
- Arabic calligraphy has connected letters and letters that do not accept the connection.
- A single figure differs in its connotation and the meaning of its placement if it has one point, and it also differs if it has two or three points.
- The identity of the Arabic letter is based on compatibility, homogeneity, and proportionality, which are the basis of innovation.
- Variation in letter size: It is the basic characteristic of any alphabet letter, such as (ب ق) (بق).
- The difference in the shape of the letter: It is easy to identify and understand easily, like (غط).
- Geometrical aspects of typographic design, including interval ratio, perfection, completion, and saturation.

These are special qualities that characterize all ancient and modern Arabic fonts, and the opportunity for the graphic design student to study the standards and foundations of Arabic letter design gives him distinction in the ability to employ the typeface product in the design of corporate identity.

Analysis result:

Through the theoretical framework and the analysis of several students' works, a study tool was designed to measure the outcomes of modern Arabic typography design among students and affiliates of the field of graphic design and its impact on enriching digital content.

Study sample: Students and graduates from the Graphic Design Department - Al-Ahliyya Amman University, Jordan.

Study procedures: The researcher used the descriptive analytical approach to describe and analyze the data.

Study tool: To achieve the objectives of the study, the researcher designed a questionnaire, which includes:

Part one: Demographic information that includes:

- The University (Al-Ahliyya Amman University, Jordan)
- Academic Degree (Graphic Design Students, Graphic Designer - Masters, Ph.D.)
- Specialization (Graphic Design) Visual Arts (Graphic - Design - Calligraphy)

Part two: Study Statements:

It consists of 21 statements that aim at measuring the extent of students' interest in designing Arabic fonts and identifying the role of those fonts in enriching digital content and measuring the level of typographic design, its applications, and learning outcomes for students of graphic design and visual arts.

Validity and reliability of the tool:

To verify the validity of the study tool, it was presented to several academic professors with experience and expertise, to know their opinion on the validity and clarity of the statements for the subject of the study.

The researcher determined an estimated balance according to the five-point Likert scale for response, weighted average, length of period, and level. Table 5 below shows this.

Table 5: Estimated balance according to the five-point Likert scale

Source: Authors

Response	Weighted average	Period length	Level
Strongly Disagree	1:1.79	0.79	Low
Disagree	1.80: 2.59	0.79	
Neutral	2.59: 3.39	0.79	Average
Agree	3.40: 4.19	0.79	High
Strongly Agree	4.20: 5.00	0.80	

Table 6: Characteristics of the demographic sample

Source: Authors

Variable	Variable Types	Number	The ratio
University	Al Ahliyya Amman University	22	(88 %)
	Other University	3	(12 %)
Qualification	Students	11	(44 %)
	Graphic Designer	7	(28 %)
	Master's degree	4	(16 %)
	PhD	3	(12 %)
Specialization	Graphic Design	23	(92 %)
	Visual Arts (Graphic - Design - Calligraphy)	2	(8 %)
Years of Experience	5 - 1years	20	(80 %)
	10 - 6years	5	(20 %)
	11years or more	0	(0 %)
Study design Arabic typography	I received (studies, curriculum, training)	20	(80 %)
	I did not receive (studies, educational curricula, training)	5	(20 %)

Table 7: The first axis: the design of modern Arabic typography

Source: Authors

#	Paragraph	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	standard deviation	ranking	arithmetic mean
		Nr	Nr	Nr	Nr	Nr				
		%	%	%	%	%				
1	Students of visual arts in general and graphic design have a great interest in learning modern Arabic typeface design.	0	1	5	14	5	2.08	0.759386	4	low
		-	4.0	20.0	56.0	20.0				
2	The scarcity of graphic design graduates specialized in designing Arabic typefaces.	0	2	1	13	9	1.84	0.85049	6	low
		-	8.0	4.0	52.0	36.0				
3	Modern Arabic typographic fonts achieve harmony between aesthetic values and modern typographical requirements.	0	1	2	12	10	1.76	0.77889	7	low
		-	4.0	8.0	48.0	40.0				
4	Arabic calligraphy studies the traditional modern does not depend on the loss of the design of the Arabic typefaces.	1	11	2	7	4	2.92	1.25565	2	Average
		4.0	44.0	8.0	28.0	16.0				
5	Modern Arabic typography is an integral part of corporate identity design in the Arab world.	1	0	1	12	11	1.72	0.89069	8	low
		4.0	-	4.0	48.0	44.0				
6	There is no obligation to apply Arabic font design standards	4	9	6	5	1	3.40	1.11803	1	High
		16.0	36.0	24.0	20.0	4.0				
7	Arabic calligraphy is a solid line of letters, which affects its use in graphic designs	0	7	6	10	2	2.72	0.97980	3	Average
		-	28.0	24.0	40.0	8.0				
8	Latin fonts have an influence on the design of modern Arabic fonts.	0	7	6	10	2	2.04	0.61101	5	low
		-	.0	24.0	40.0	8.0				
The overall average effect of modern Arabic typography design							2.31	0.90549		Low

Table 8: The second axis: the applications of Arabic fonts in graphic design

Source: Authors

#	Paragraph	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	standard deviation	ranking	arithmetic mean
		Nr	Nr	Nr	Nr	Nr				
		%	%	%	%	%				
16	By learning Arabic typeface design, the graphic design student has the ability to design corporate identity.	0	1	2	13	9	1.80	0.763763	5	low
		-	4.0	8.0	52.0	36.0				
17	The graphic design student has the ability to employ Arabic typography in improving print and digital graphic design products	0	1	7	10	7	2.08	0.862168	4	low
		-	4.0	28.0	40.0	28.0				
18	There are difficulties for the graphic design student in understanding Arabic typeface.	0	7	7	7	4	2.68	1.069268	2	Average
		-	28.0	28.0	28.0	16.0				
19	The use of modern Arabic typography gives the graphic design student more space for creativity.	0	1	1	10	13	1.60	0.763763	6	low
		-	4.0	4.0	40.0	52.0				
20	The graphic design student owns and works on the employment of fonts available open source on the Internet.	1	1	6	13	4	2.28	0.936305	3	low
		4.0	4.0	24.0	52.0	16.0				
21	The graphic design student has the ability to employ Arabic fonts in the form of a plastic artwork only.	2	6	9	5	3	2.96	1.135782	1	Average
		8.0	24.0	36.0	20.0	12.0				
	The overall average effect in Outcomes of learning the design of modern Arabic typography for students of graphic design						2.23	0.921841		Low

Table 9: The second axis: Outcomes of learning the design of modern Arabic typography for students of graphic design - Source: Authors

#	Paragraph	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	standard deviation	ranking	arithmetic mean
		Nr	Nr	Nr	Nr	Nr				
		%	%	%	%	%				
16	By learning Arabic typeface design, the graphic design student has the ability to design corporate identity.	0	1	2	13	9	1.80	0.763763	5	low
		-	4.0	8.0	52.0	36.0				
17	The graphic design student has the ability to employ Arabic typography in improving print and digital graphic design products	0	1	7	10	7	2.08	0.862168	4	low
		-	4.0	28.0	40.0	28.0				
18	There are difficulties for the graphic design student in understanding Arabic typeface.	0	7	7	7	4	2.68	1.069268	2	Average
		-	28.0	28.0	28.0	16.0				
19	The use of modern Arabic typography gives the graphic design student more space for creativity.	0	1	1	10	13	1.60	0.763763	6	low
		-	4.0	4.0	40.0	52.0				
20	The graphic design student owns and works on the employment of fonts available open source on the Internet.	1	1	6	13	4	2.28	0.936305	3	low
		4.0	4.0	24.0	52.0	16.0				
21	The graphic design student has the ability to employ Arabic fonts in the form of a plastic artwork only.	2	6	9	5	3	2.96	1.135782	1	Average
		8.0	24.0	36.0	20.0	12.0				
	The overall average effect in Outcomes of learning the design of modern Arabic typography for students of graphic design						2.23	0.921841		Low

Discussions:

A- Analysis of the results of the questionnaire for the first axis: modern Arabic calligraphy design:

Table 7 obviously reveals that statement (6), which states that (There is no obligation to apply Arabic font design standards), has the highest arithmetic average (3.40). It is also noted that there are two statements that obtained average rates, such as statement (4), which states that (Arabic calligraphy studies the traditional modern does not depend on the loss of the design of the Arabic typefaces), with an arithmetic average of (2.92). Besides, it is noted that there are two statements that obtained low rates, as statement (5), which states that (Modern Arabic typography is an integral part of corporate identity design in the Arab world), with an average of (1.72).

B- Analysis of the results of the questionnaire for the second axis: Employment of Arabic fonts in graphic design

Table 8 reveals that five statements obtained average percentages, while statement (13), which states that (There is no flexibility in employing Arabic fonts during employment in the fields of print and digital graphic designs), came with an arithmetic average of (2.88). It is noted that there are two statements with low scores, as statement (12) got an average of 1.52, representing that Arabic digital content needs more Arabic typefaces design and academic research to enrich this field.

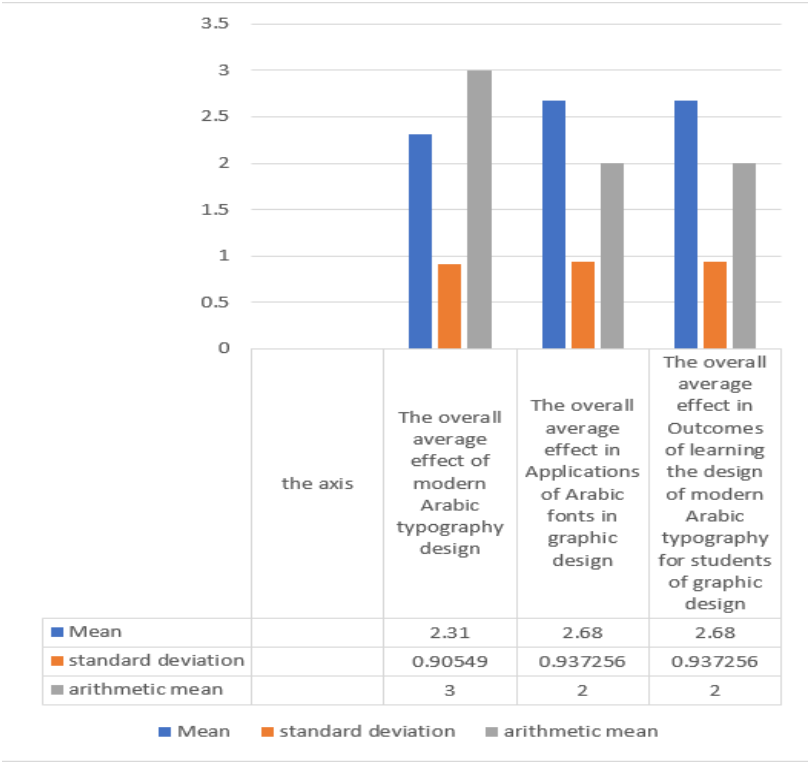
C- Analysis of the results of the questionnaire for the third axis: Outcomes of learning the design of modern Arabic typefaces for students of graphic design

Table 9 reflects that two statements obtained average rates, as statement (21), which states that (The graphic design student can employ Arabic fonts in the form of a plastic artwork only digital graphic designs), got an arithmetic average of (2.96). Besides, it is noted that there are (4) statements with low rates, as statement (19), associated with the use of modern Arabic typefaces gives the graphic design student more space for

creativity, got an arithmetic average of (1.60). Fig. 7 below highlights the statistical analysis of the data collected through the questionnaire.

Fig. 10: Statistical analysis of the axes of the study statements

Source: Authors



the axis	The overall average effect of modern Arabic typography design	The overall average effect in Applications of Arabic fonts in graphic design	The overall average effect in Outcomes of learning the design of modern Arabic typography for students of graphic design
Mean	2.31	2.68	2.68
standard deviation	0.90549	0.937256	0.937256
arithmetic mean	3	2	2

Scale reliability:

Cronbach's alpha coefficient was used, and the reliability value of the study tool was (0.627). This value reflects that the tool has an appropriate degree of reliability to conduct the current study.

Statistical analysis:

The researcher used the SPSS to analyze the data collected from the sample of 25 students and graduates from the Graphic Design Department at Al-Ahliyya Amman University.

Conclusion:

Through reviewing a number of student outcomes in modern Arabic font design, as well as the results of a questionnaire, the development of Arabic font design skills among graphic design students and graduates become evident. The analysis of data reflected that the selected students have the ability to overcome the difficulties of designing the aspects of the Arabic typographic letter for graphic design students by applying the foundations and standards of design.

Furthermore, the findings revealed that there is a need to develop standards for designing the aspects of modern Arabic typography, especially in graphic design programs. In this respect, the extent to which the educational outputs can be developed in the design of the aspects of modern Arabic typography among graphic design students is large. Besides, graduating a modern quality graphic designer, who has the knowledge and ability to build Arabic typographic fonts professionally, helps enrich graphic design companies with distinguished designers.

Recommendations:

- Paying attention to teaching Arabic typography design in all graphic design departments.
- Working to support and encourage innovative designs of Arabic typefaces to be used in various graphic designs.
- Working to disseminate the use of modern design trends for Arabic typography.
- Introducing the design standards of modern Arabic calligraphy for graphic design students.
- Providing the library of digital Arabic fonts with modern and different designs that contribute to enriching digital content.
- Developing modern methods of communication through modern Arabic Typefaces.
- Paying attention to the aesthetic and artistic elements of modern Arabic typography design, which contribute to the public's reception of distinct Arabic graphic designs.

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