The variables and the modern technics and their effect on the phenomenon of architectural formation of the public squares and their roles in realizing development and creativity. Application on the curriculum of architectural glass design for the fourth grade.

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Abstract:

The alternative relation between the human and the place is built from the fact of needing or benefit and the fact of emotional bonding, adaptation varies from one person to the other according to his cultural background, the civilized exterior voids are considered a place that contains human activities with certain elements that define those voids, each one of them has a basic role, the square is considered the first voided pattern for the architectural formation, that human is dealing with and it is produced from the combining of a group of buildings around open space, the ways of architectural formation are linked to how it can achieve the various human demands, with the appearance of many variables and new updates such as ”the social, cultural and the economic variables, with the availability of the modern technics, developed construction methods and the environment friendly materials” which had a huge influence on the change of the features and the formative vocabularies that are characteristic to the traditional public squares.

Through this research the researcher is trying to highlight the modern design curriculum and the ways to benefit from them in dealing with our Arabic heritage to design squares with untraditional point of view, some inspired from the Islamic art and others inspired from local traditions and most of them are matching to the concept of the modern art, which maintain the core and develop the look to fit with the surrounding of the contemporary environment around it.

The search problem lies in the next question:

How could we root and confirm the aesthetical values of the Islamic art when designing and forming the architectural space of the public squares despite of the presence of the modern variables and updates?

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The search goal:

Is to focus on the modern design curriculums by benefiting from the Islamic heritage to design squares, with suggested strategy that realizes the compatibility among the variables and the modern technics and the designing directions of the architectural formation phenomenon.

Key words:

The elements of the squares - the formation of the architectural space – Islamic art

الملخص:

إن العلاقة التبادلية بين الإنسان والمكان تنشأ من واقع الاحتياج أو المنفعة وواقع الارتباط الوجدانى ، ويختلف التكيف من إنسان لآخر تبعاً لخلفيته الثقافية ، والفراغات الخارجية الحضرية تعتبر مكاناً يحوى أنشطة إنسانية بواسطة عناصر تحدد هذه الفراغات والتي لكل منها دور أساسى ، فالميدان يعتبر أول نمط فراغى للتشكيل المعماري يتعامل معه الإنسان وهو ينتج من تجمع مجموعة من المنشآت حول فراغ مفتوح ، وقد ارتبطت أساليب التشكيل المعماري بمدى تحقيق المتطلبات الانسانية المختلفة ،إن الاشكال بمدلولها في التصميمات المعمارية والفنون التشكيلية تعتبر من إهم واكثر العناصر اقناعا في العمل الفني ومعظم النظريات والمفاهيم المعمارية التي تناولت الاشاكال المعمارية تناقش الاسس الديالكتيك او الجدل وهو منطق يقوم علي الحركة بدلا من الثبات والاختبار النقدي للمبادئ والمفاهيم او علي اسلوب مدرسة الرؤية المتكاملة (الجشتطالت)وهي كلمة المانية تعني الشكل او النمط وهو ما سوف يساعدنا في ايجاد رؤئ ذات متغير فكري ومعالجة بصرية بالسوب حديث

ومع ظهور العديد من المتغيرات والمستجدات الحديثة مثل " المتغيرات الاجتماعية والثقافية والاقتصادية ومع توفر التقنياتالحديثة وطرق البناء المتطورة والخامات صديقة البيئة " والتى كان لها إثر كبير على تغير الملامح والمفردات التشكيلية المميزة للميادين العامة التقليدية.

ومن خلال هذا البحث تحاول الباحثة إلقاء الضوء على مناهج التصميم الحديثة وطرق الاستفادة منها في تناول تراثنا العربي لتصميم الميادين بوجهة نظر غير تقليدية بعضها مستوحي من الفن الاسلامي وبعضها مستوحى من التقاليد المحلية وأكثرها مطابق لمفهوم الفن الحديث، والتي تحافظ على المضمون وتطور من الشكل كي يتناسب مع محيط البيئة المعاصرة حوله.

ولهذه المفاهيم عدة اشكال ورؤى فنية وتشكيلية متعددة ومتغيرة بتغير نمط التصاميم والفكار والمعالجات الفنية التشكيلية للميادين ومدى تأثرها بالأفكار والمعتقدات الموجودة بالبيئة المحيطة لها ومدى ثقافة واطلاع المصمم المعماري على ثقافات وحضارات أخرى، تمكنه من ترجمة أفكاره الفنية.

مشكـلة البحـث:

تكمن في التساؤل الآتي:

كيف يمكن تأصيل وتأكيد القيم الجمالية للفن الاسلامي عند تصميم وتشكيل الفراغ المعماري للميادين العامةرغم وجود المتغيرات والمستجدات الحديثة؟

هدف البحث

- إلقاء الضوء على مناهج التصميم الحديثة بالاستفادة من التراث الإسلامي لتصميم الميادين، من خلال استراتيجية مقترحة تحقق المواءمة بين المتغيرات والتقنيات الحديثة والاتجاهات التصميمية لظاهرة التشكيل المعماري.

الكلمات المفتاحية:
عناصر الميادين – تشكيل الفراغ المعماري– الفن الاسلامي.

Introduction

The study methodology of the curriculum of architectural glass design to the fourth squad depends on a case study of Al Manial square at Cairo governorate, it starts with the theoretical study explaining the most significant historical and functional factors, the importance of the location, economic and technological factors then a field scan and case study of the site. Elements of the site and vocabularies of architectural spatial formation, then putting the design ideas and the executive drawings.

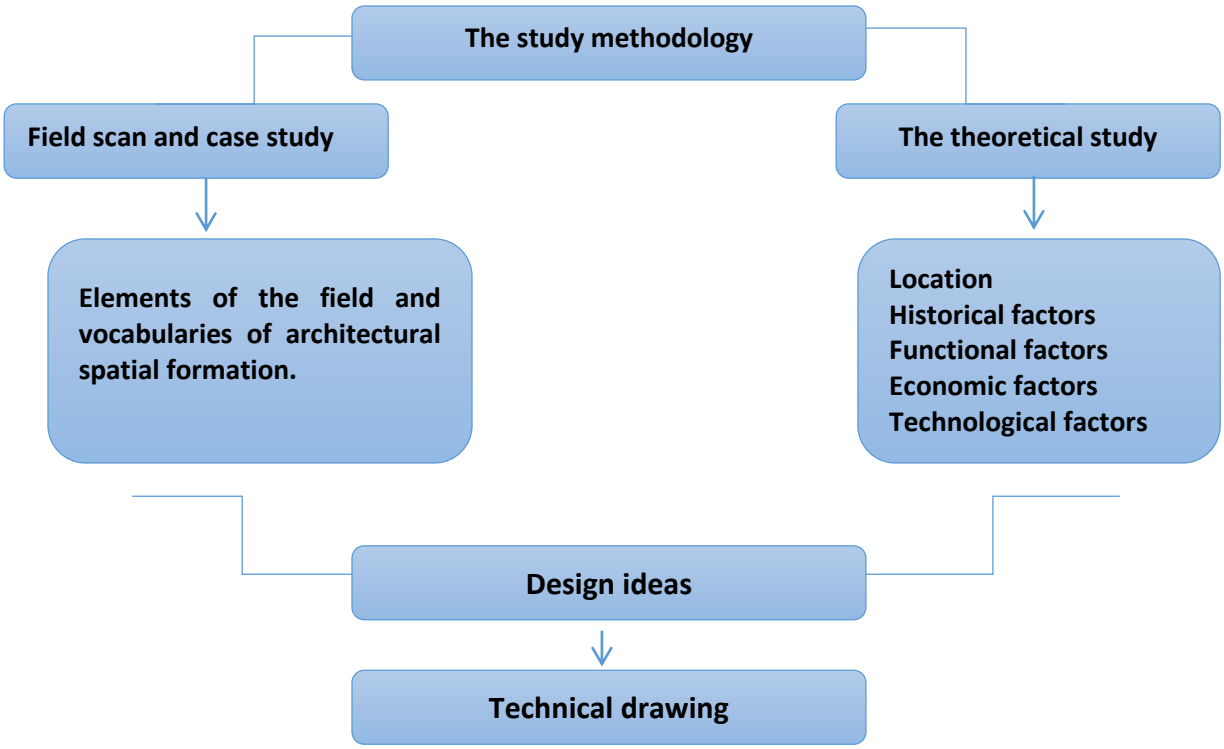


Fig. (1) a diagram that shows the study methodology

The study methodology:

1st: the theoretical study:

1- **Location**: each location has its own characteristics that are formed through its functional significance as it is characterized by its spatial position in the city which adds a functional significance to it and distinctive visual features that need to be studied, so as its development in particularly the visual sides to achieve balance among the functional needs and their aesthetical characters.

2- Historical factors: the historical dimension of the area represents an important factor in the beautification of the environment regarding the time factor of the historical stages that it was influenced by from the various civilizations, the cultural intellect that is reflected on the architectural formation of the square.

3- Functional factors: they represent various uses of squares that are being functioned according to needs of the society, basic components, and elements of its furnishing that help in realizing its function with the highest possible efficiency.

4- Economic factors: economic potentials of the society affect the various architectural formations and are connected to all elements of design, while designing a square; all natural resources have to be used properly as storage of renewable sun energy to use it in lighting the square in the evening.

5- Technological factors: represented in building materials and methods of construction in addition to the modern, variable scientific and technological ways. Building materials and methods of construction are affecting the shape and composition of urban spaces and squares in particular, which show the variation in shape, texture and color.

2nd: field scan and case study:

Students made a field study on Manial Al-Rawda square to know how to determine the elements of a square which allow the making of various designs that are inspired from the Islamic intellect due to the history of the square that includes the historical study of the location of Al Manial island which attracted many members of Mohamed Ali Pasha family to live in this area and build castles in it. Khedive Ismail had a mansion on the Nile banks, his father Ibrahim Pasha before him built a castle inside an island and finally prince Mohamed Ali son of Khedive Tawfik built a palace called Al-Manial palace or prince Mohamed Ali palace and it was built in 1903, many of the sons of high social level kept on living at this area Manial Al-Rawda and built villas and palaces there like the famous lawyer Ibrahim Bey Al-Helbawy the 1st chief of lawyers' syndicate, there is a station that carries his name till now "Al-Helbawy station". There is also a palace that belongs to Saied Pasha Zou Al-Fakar the chief secretary of the royal palace since king Fouad the first, one of the most important squares in Manial Al-Rawda is attributed to him "Al-Pasha square" and it is intersected by a street that carries his name "Saied Zhou Al-Fakar street" one of the eldest inhabitances who lives in Al Manial tells that they used to get drinking water from waterier who used to deliver water to houses in their water bottles that were

made of leather and those waterier used to bring water from a public tap placed in "Al-Ghamrawy street" inside a wooden kiosk. Al-Kasr El-Einy medicine school (Cairo University) is in Al Manial square and it was the first medicine school to be established in the modern age at the time when Mohamed Ali Pasha ruled Egypt, the name was after the name of the palace owner "Ahmed son of El-Einy" who built it in 1466 at the Mameluke era.

Fig. (2) A survey study of Manial Al-Rawda field, showing a map of the field area and the location of the field, with its features and an urban space surrounding it

The elements of the square and vocabularies of the architectural space formation:

Components of the square are considered of the most important elements of the field study, it is considered a way for its identification and help in reading its case and how it serves the square and forms its relation with the surrounding environment and urban space which can be determined as the following:

- Floors
- Green landscape/ flower beds /trees
- Furniture: seats/ light poles
- Walls/ surrounding interfaces
- Murals/ memorials
- Fountains
- Bus stations and sunshades

- Any other elements that weren't mentioned and was there in the space.

To create field elements in the architectural space inspired from Islamic art, as the Islamic architecture is characterized by advanced architectural intellect which relies on right basics. The basics of Islamic intellect that the students used in designing the elements of the square can be summarized in the following points:

1- Natural sense of benefits and providing functional spaces that suit human.
2- Use of ratios and measures that express the spirit of Islamic intellect from humility and simplicity in expression.
3- Use of architectural elements that can cope with the climate.
4- Linking all architectural formation to geometrical shapes.
5- Paying attention to planting and coordination in a geometrical shape with fountains and small bodies of water.
6- Geometrical lines to give an illusion of continuity, interaction and abstract.

In order to study the status of the square, the following procedures were done:

a- Putting basics of development and preparing to take the decision to finish the design process, through availability of feedback.
b- Locating points of weakness and strength in those elements to support points of strength and change points of weakness.
c- Help in revealing the students' needs, tendencies, capabilities and their preparation to consider that in their designs and help in rising up the level of educational process.
d- Providing the students with specific information about the progress they have achieved towards realizing their objectives.
e- Caring about ordering the thinking processes and the use of solving problems technique, confirming the application in real world of what the students receive from data and knowledge.
f- Mental operations and skills of pursuit and discovery should be cared about with the students also solving problems and decisions making.

When identifying the elements that the students chose, a field study of the square had to be done to select the chosen locations for making the designs; they faced some problems which were located in:

a- The difficulty in realizing the visual environment due to the large number of stores and buildings around the square.
b- No coordination among the elements especially the ones that follow more than one managerial facility like (advertising signs that are hanged over light poles).
c- The lack of following clear design criteria and basics to distribute the elements and the choice of their positions as well.
d- Not following the aesthetical aspects in most of the supplemental elements.

e- The unclear signs about numbers and directions of buses and the lack of aesthetical considerations in the bus stations.

f-Rare green areas and trees which has a bad effect on environmental, visual sides and architectural spaces.

The methodological frame of the design study depends on:

- Highlighting the main civil features of the area.
- Not forcing or fabricating essential visual changes that could cause change of the current nature of the area.
- Paying attention to not mess up the current functional relations between the area and its influential field to and with the surrounding and its components which create a traffic ease for people and vehicles.
- Method of treatment has to match the environmental and social characters of the area.
- Method of treatment has to be economic, realistic and easy to be executed.
- Method of treatment should be contemporary and matching the modern art trends and updated technological changes.
- Make use of vacant lands and facilities in putting the general idea of the urban design with the guidelines of the visual coordination of the area.
- Matching ratios and sizes of aesthetical shapes with the surrounding buildings.
- Harmony and coordination between the aesthetical shape and the surrounding elements.
- Caring about traditions and religious views of the society which will deal with beautification works.
- When designing bus stations and sunshades they have to be in locations that suit points of people gatherings and their movements and the stop has to serve the commercial activities and passengers movement, and choice of its location in a way that don't obstruct traffic and provide safety for passengers getting on or out of buses.
- Not ignoring the general architectural style of the area and the architectural formation.
- Making a design that has the entire artistic feature with what suits the modern intellect in design and advanced technology.
- Reformulating shapes of Islamic and historical artistic heritage in a contemporary way that suits the environment.
- Benefit from the available materials and use them in designing the various elements of the square.
- Simplicity in the architectural design of the elements of the square to realize the principal of moderation and decrease the economic cost of building.

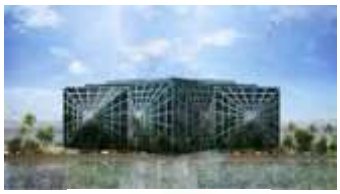
Methodology of making decision in the design: includes the use of principals and general rules that are inspired from the Islamic intellect and directing it into the operation of decision making of the suggested design.

Stages of completing the design: include a chain of rational procedures that are being executed consecutively to finish the design by putting the primary ideas and evaluating them according to the objectives, planned rules and nature of the application model.

The applied project: it includes the choice of the best suggested solutions, developing and executing them.

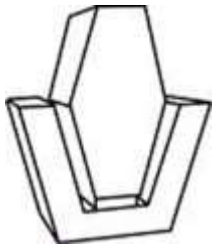
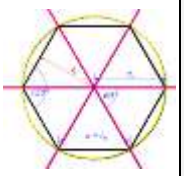
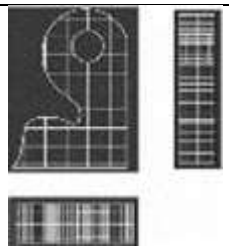
Analytical methodology for the ideas of 4th squad students in designing elements for Rawda Al-Manial square Benefiting from the Islamic art.

1st element: fountain

Final design	executive drawing	Primary idea	Silhouette form	Islamic element	no.
Hexagonal Islamic star: it is consisted of 2 intersected triangles, one has its head on top and the other its head is at the bottom, the shape of triangle spread among Islamic arts, when heads of triangles placed at the top as in pyramids, they attract the eye to look up and give a sense of a rising power, standing tall and stability. But when they are placed in reversed positions, they create a sense of instability. Triangle is a basic shape in Islamic art "it is a part of a shape that gains its symbols and significances from" that's how the 2 triangles making the hexagonal star are considered symbol of that contrast of the upward and downward movement, and a symbolic equivalence for the relation between the conscious and subconscious, the star was called "David's shield" and Suleiman' ring, it was used as a door amulet (Mizoza) as the 7 names of angles were written on it and each name was accompanied by the hexagonal star.					
  				 	1.

Second element: The memorial

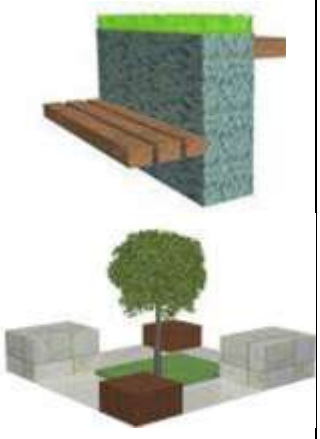
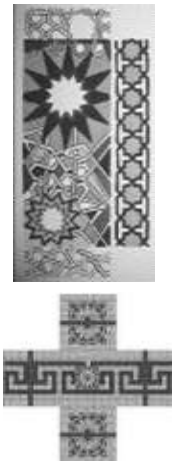
Hexagon: in spite of the presence of geometrical basics that are used in building the proportional measures of all simple and compound nets as a geometrical foundation. When examining the visual radiation of hexagonal stars and follow the extension of the star's sides across the decorative fabric to look for human symbols in his 3 regions through the triangular shape or to look for substance and earth symbols in their 4 regions that's when we find that hexagon is expressing the 6 days that took god to create the whole world as it expresses integration.

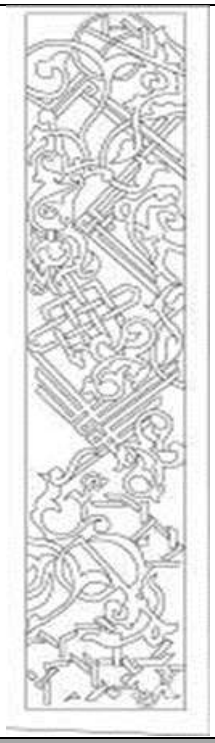
					2.
The Arabic letter W "و": the significance of the letter "و" represent the oneness of the almighty god and it matches what the prophet said " the man is being inside his mother womb as the shape of letter "و" then he is born on the shape of letter "و" and a man should never forget that he will stay all his life as the shape of letter "و" and he must realizes well everything that is bigger than him, when we kneel to god we look like letter "و".					
					.3
The third elements: floors					
Botanic motifs: are the most obvious characters that show the tendency of Muslim artist to stay away from mimicking nature and literally transfer it, most of the time they are motifs that are completely abstracted that we can hardly tell branches from leaves but we recognize curved lines or spiraled around each other so their borders are curved and a few flowers and leaves with one or 2 or 3 lopes are appearing among them, those branches are coming out of tree stem or trunk or a pot or even other branches and stretched on the shape of arches or folds, sometimes leaves come out of branches to occupy the space among them and fill the collection required to be decorated. The botanic style was characterized by the extreme modulation of the natural elements that the botanic motifs have become more complicated than ever.					

 **The tile unit after repeating it to explain the shape of the botanic motif as an integrated part of the floor**		 **Sketch shows the position of the floor**		 **Different shapes of botanic motifs**	-4

The fourth element: seats

Geometrical motifs: the most prominent characteristics of art in Islamic civilization that it is based on geometrical abstract as the Muslim artist tried to extract rules of nature due to his belief in his doctrine he tried to understand the geometrical basics and the mathematical logic that control and organize the universe and its progress. So he tried to follow certain road in the way he handled shapes or geometrical units, which cause for that style to become a science that has its own rules, just by looking at the general composition of those units, they give the impression that their order wasn't improvised but they were there based on basics of studied geometrical measures. Despite the complexity that shows in Islamic motifs but in fact they are simple and based on rules. Islamic arts are characterized with their diversity that each Arab artist has his own uniqueness, Islamic geometrical motifs are the most significant features of art and they include various Islamic units that are like no other as they are created by their imagination.

			 **Design of the seat inspired from geometrical motifs**	 **Geometrical motifs that the design idea was inspired from**	.6

			 **Stereoscope of the seats**	 **Observation of the current site in front of KFC. Restaurant and positions of people seats**	

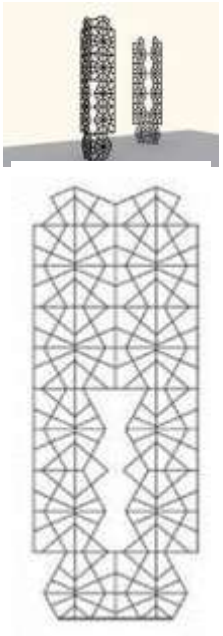
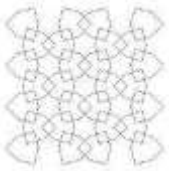
Fifth element: land marks

The Islamic chain: it expresses braiding which is an expression that is used when lines take paths that look like hair braids or twine strings. No matter how high or low the number of the paths but there is only one rule to make them. There are several types of braiding "open braiding" which means that all twined strings have an open end, "closed braiding" which means that twined strings are in closed shapes and have an end.
The design has both closed and opened braiding.

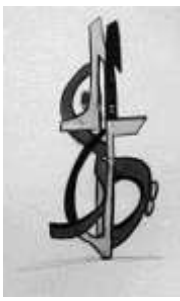
  **The memorial in its habitat to be used.**		 		 **The Islamic chain that design was inspired from**	.7

				 **observation of the current location in front of the university bridge**	

The line: it is created due to the movement of a dot or it is drawn by the ray coming from it, a line is a manifestation of an action that a dot is doing and its movement. A horizontal line is linked to the horizon and to the axis of a human body as it lies down so it symbolizes sleeping and quietness so it is an earthy line in the world of lines that symbolizes body that ends with death

 				 **Geometrical motifs that the design idea was inspired from** 	**.8**

Arabic calligraphy: is the art and design of writing. Arabic calligraphy is characterized by being connected which made it liable of gaining various geometrical shapes through stretching, returning, tangling, cycling, angling, interference and composition. Arabic calligraphy is always paired with Arabic motifs as it is used to decorate mosques and palaces and in decorating manuscripts and books especially copies of holy Quran, that field has a huge acceptance from Muslim artists due to Islamic doctrine that prohibits animal and human illustration especially at holy places and Qurans.

.9			 	 	  
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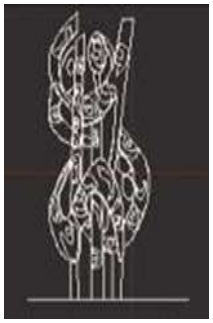
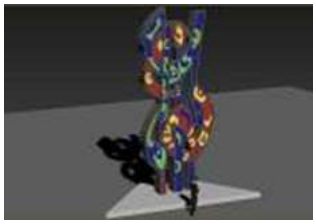
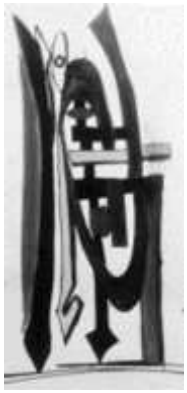
11.				 	 

	 				12.

Sixth element: murals

Murals in the Islamic age were influenced by Sassanid, Greek, and Romani and Byzantines arts, Muslims quoted from those some motifs elements that match the principals of Islam, so they took them and added to them. Muslims never let illustrations or mural drawings be used as a mean of religious guidance. Islamic mural painting usually has been linked to architectural motifs for what they contribute in breaking the space and connecting interior walls, motifs were either botanic or geometrical. Murals of the Islamic era were characterized by being committed to instructions of Islam that prohibit manifesting or painting anything that has soul, which caused Muslim artist to stay away from imitating or copycat the exact reality but to record his emotions and feelings, that's why his paintings have decorative character away from reality and depending on imagination.

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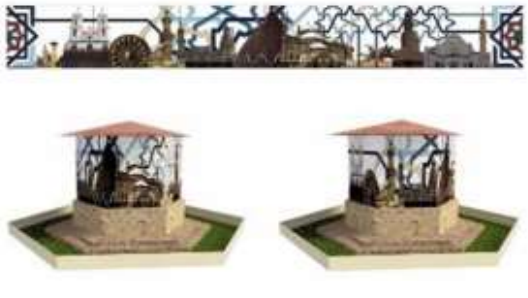
		14.

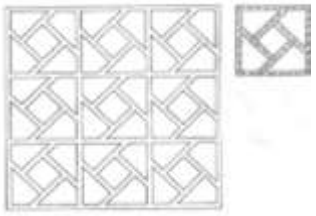
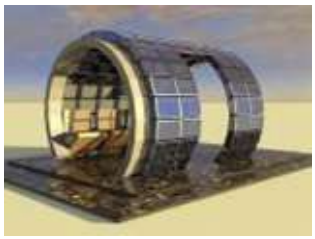
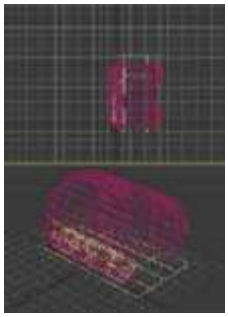
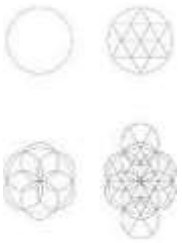
Seventh elements: bus stations and sunshades:

The star: or what is called "the shimmering planet" which is an octagonal star surrounded by tiny, sparkly, equal sized stars, that symbol was used at all Islamic countries but for Iran and Iraq, they chose another symbol for the shimmering planet which is made of 12 angels after the 12 Imams peace be upon them. The shimmering planet has a symbolic significance, it is made of 8 sections that are resulted from the intersection of 2 equal sized crosses, and the cross is symbolizing the sun which sends its rays to the 4 parts of the world. The delusional circle that has the people symbolizes the almighty god as he is the beginning and he is the end, that's why that star was taking as an Islamic symbol that's why it is paired with the crescent at all formations and motifs done by Muslim artists.

					15.

Almafrukat: it is a kind of motifs that is done on wood in shapes of squares or rectangles, from each side there is an extension from only one direction so it looks like a fan in its shape has a rhythmic movement, students took advantage of its movement and its abstract to create the body of the bus station.

Dianthus "the clove flower": the formation of its leaves according to the Muslim artist vision gives the shape of the word "Allah" it was highly used in Iran and Turkey; they used it in decorating palaces and mosques, one motif unit that praises the name of god the creator. Students benefited from it in making sunshades of the station with dovetailed glass technique.

  		  **the shape of Almafrukat and the Dianthus that the artistic work was inspired from**	16.
The circle: it was inspired from the sun, the full moon, the sky arch and it represents the revolving of earth to create day and night, death and resurrection, it links the circle as a religious dimension representing circling and turning around Kaaba and circles of prayers and litany for Sufis and Dervish. Spiral shapes are resulting from the circle and they resemble the movement of planets and galaxies, all those shapes are used in Islamic architecture regularly. The median circle represents the methodology of prophet Mohamed actions due to equality of its circumference which assimilates justice, modernity and balance.			
 					17.

That field study has been done at (Kasr Al Nile square)- Cairo- Egypt.

Results:

- We took advantage of being at the square to show the learned values in the designed works created by students.
- A collection of artistic designs was created and it was inspired from the elements of Islamic arts" the chain, Almafrukat, hexagonal star, Arabic calligraphy, circle, the Arabic letter و" they were all utilized at the various elements of the square" seats, memorials, bus stations and light shades- floors, etc.".
- The students' capability after proceeding the analytical study to create an intellectual change in the mechanisms of design and execution

Recommendations:

The ability to create a change and decorate the crowded squares of Cairo after documenting that research paper and its applications.

References:

- Case study "scanning study to Kasr Almanial square".
- Foundations of architectural design and urban planning at the various Islamic ages" analytical study on Cairo the capital of Egypt. Center of architectural and planning studies, center of reviving the Islamic architecture heritage, 1990.
- "Islamic art, its origins, philosophy and schools" Abou Saleh Al- Alphy- Dar Al- Maaref, 1969.
- Google map.