

DIGITAL ART AS AN ENTRY POINT TO ENHANCE THE DESIGN CAPABILITIES OF ART STUDENTS-AN EXPERIMENT FOR UNDERGRADUATE STUDENTS-

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Abstract

The 21st century witnessed a great revolution in the field of digital and technological proliferation, so researchers in the field of design arts and education had to take ways to develop for change by searching for various directions, opening new horizons for creativity, and innovation through the application of innovated technological technologies, change of thought and teaching methods that used, to create an innovative generation of artists and scholars of arts in order to develop thought, and to promote the teaching systems of the arts curriculum, especially with the importance and placement of art education in its various fields, especially design Not only in the field of art production and study, but also in the field of creation, creativity and innovation, In addition to its important and prominent role in serving the community , addressing its issues, also its broad applications in various scientific fields.

So The current research aimed at developing proposals and recommendations for issues related to the development of art education, specially ornamental design, and achieving communication through knowledge, analysis, and experience to teach art Under the global changes, to prepare new artistic outputs Commensurate with the requirements of Egypt's strategic vision 2030 for development .

Key words: Digital art- Ornamental Design- Creation- Innovation- Teaching arts

An Introduction:

There is no doubt that the digital revolution that societies are experiencing, and the current trend to transform from traditional and modern methods - which include the different and varied uses and applications of computers - in dealing with all matters, to the era of digitalization, and the transformation of all aspects of cultural, educational, and social life into an era More advanced and faster, and the trend to change the methods of thinking, planning, and processing The treatment of all subjects in a manner has imposed on us as societies that both innovation and creativity are two basic features of all these processes, it is one of the things that required keeping pace with that trend, and quickly catching up with it if we want to continue, especially since the new generations of young people and youth have lived through that development And interacted with it, so it was important and necessary to change and develop methods of thinking and implementation to keep pace with those differences and new changes, which impose themselves on all societies “The importance of innovation and its application value in the progress and development of humanity is no longer a matter that needs a statement. It has become accepted that this progress depends on the extent to which contemporary societies can have innovative capabilities that will always enable them to offer more innovations, and the contributions made by them

alone can be achieved. Humanity must face the urgent and exacerbating problems that it encounters.”⁽¹⁾

From that point the idea of the current research have been burned , which seeks to present a different vision in the treatment of the ornamental designs that the student designs and implements in the field of art education, whether inspired by heritage, expressing an event, addressing issues of the homeland, or expressing his vision and point of view towards an idea, Or towards a topic. Where the research sought to use the modern graphic applications that have spread to tablets and smart phones in implementing an animation story by processing two-dimensional designs, and converting them to three-dimensional graphics.

Research background:

Digital arts is one of the new influences and inputs in the field of plastic arts, especially design, as it provides an intellectual vision, a new direction for artists, designers, art teachers, and scholars, and a fertile field for creativity and innovation.

"Digital art, as art historians define it: "It is a combination of object-oriented artwork and practical visuals. Digital technologies are means to achieve a goal, and embody the required technology" (2).

Digital art is also defined as: **"A broad term that includes the works and practices used by digital technology in professional ways as an important element to extract the concept of creativity" (3)**

The emergence of digital designs as works of art goes back to the launch of the drawing board program in the early seventies exactly in 1963, and then continued developments using the tablet computer in the nineties, thus the first programs that contributed to the formation of digital arts is Adobe Photoshop, Mac print, and then this art became the main tool in artistic drawings That affects the motifs of the artistic work and its final form. Design is one of the forms of digital art. **"Digital design is a vast world that has many possibilities. It is considered a plastic innovation, and a complete process for planning and creating an artistic work form in a utilitarian and aesthetic way. The design process depends on the designer's innovation and the exploitation of his imaginative ability in creating the work of art, by organizing the elements in a digital form within a space that includes a certain degree of balance and order."**⁽⁴⁾

1 DIGITAL ART DIVIDED INTO:

1 - Sayed sobhy,"studies and researches on innovation", el takadum press, first press, 1976, p .190.

2 - Danae HL,"whats digital art ?definition and scope of the new media.

3- shoma el balwy, " digital art", second press, feb.2019, p4.

4 - Shazah Ibrahim Al-Asqa, "The Use of Digital Possibilities on Artwork with Resin Material to Root the Islamic Identity", research published in the Jordanian Journal of Arts, Volume 13, Issue 1, 2020,p37.

1.1 DIGITAL PAINTING

It appeared in the nineties of the last century, and included traditional drawing techniques such as watercolors, oil painting and dotting, where the artist uses computers and tablets to make a painting, thus the most famous of its programs, Photoshop.

1.2 DIGITAL PHOTOGRAPHY

It depends on the use of computer applications to capture, create, edit, and share images, or manipulate them in many ways, including deleting and adding, zooming in and out, changing proportions, and others. The images can also be combined with each other in artistic formations as was happening in the art of collage previously.

1.3 DIGITAL SCULPTURE

With some programs such as 3D Max, it is possible to use and process blocks made of any raw material, carve them, shape them, and add modifications and folds that may in fact be difficult to achieve due to the nature of the materials and their physical properties, and the works appear as virtual images on the screen.

1.4 DIGITAL INSTALLATION

The technology of virtual reality and augmented reality is one of its most prominent applications and it is related to the interaction of the viewer with it through touch, movement and others, and perhaps the most prominent examples of it in the field of art are moving museums, and the experiences of visiting global museums virtually, virtual reality differs from augmented reality in that it is based on the idea of adding digital elements to The real reality, and the environment surrounding the scenes, is the opposite of the virtual reality, which takes the viewer out of his world, enters a different world, and makes him interact and live inside it. Augmented reality allows the viewer to change events, or add to the current scene.

1.5 VIDEO, ANIMATION AND MOVING IMAGES

It is one of the techniques used in the current research, which means full control over the production of artistic work in terms of time and place with the use of montage from lighting, sound, backgrounds, etc. It is divided into:

- **Live action:** This means live photography such as video shooting.
- **Animations and 3D worlds:** Animation is often a distinctive way to develop virtual reality and create interactive environments.

1.6 INTERNET AND NETWORK ART

It is one of the styles that uses design is to promote specific ideas through social media platforms.

1.7 SOFT WARE ART

It is a kind of digital art that relies on the use of algorithms, computer languages and programming to get graphics through it.

1.8 MIXED MEDIA

It consists in combining a different set of elements that may include images, animation, sound, and augmented reality to produce the artwork. It tends to experiment and depends on experience in producing new artworks, and current research uses it to conduct practical experiment.

From the above, it is clear that digital art is a new field that imposes intellectual trends and artistic methods different from what was usual and traditional, and opens new horizons for creativity and innovation in all fields of arts, especially ornamental design and graphic design. "the design artist needs the digital art's contemporary techniques to benefit from the technology, or the implementation of the work, using the design elements, and digital processes to achieve the principles of design "(5),and This contributes to, and is a new starting point for, design teaching and learning.

By research, analysis, and experience, it was found that the art education curricula that are taught in pre-university education stages did not deal with changing or developing an influential methodology in its content, or even in the teaching methods followed in it in line with modern trends that are among the requirements of the technological development that coincides with our current era - The era of digitization - and that the curricula were and still follow the traditional method, whether in their planning, content, or methods of implementation except in rare cases, And, within the limits of the researcher's knowledge, it does not include appropriate planning that takes into account the parity between the sections of the art education subject, and that the design subject in particular has not been dealt with by adding new topics, ideas, or visions that can be classified as starting points for design topics that keep pace with technological development, which is The case with regard to methods of implementation and methods of teaching the subject, which is inconsistent with the requirements of the current technological revolution.

"The development of the creative field has a deep and broad base present at the core of the social process, bridging the gap between physical action and intellectual work based on the unity of creating complementary creative material and spiritual conditions" (6).

Keeping pace with that progress and the trend for creativity and innovation can only be achieved by encouraging art learners to experiment according to the current data and requirements, and by giving their minds the opportunity to delve into, debate, and analyze these data. Shaker Abdel Hamid confirms this by saying: "**its important to encourage children to experiment through the use of appropriate materials and means, experimentation has a great role in acquiring skills, and in upgrading them, provided that it is purposeful, and directed towards solving a specific problem, and the need to be mixed with simple problem-solving processes during aesthetic training "(7).**

⁵ – Mahey Nour Bassiouni Hassan, "The Relationship between the Discretionary Movement and the Digital Arts in ornamental Designs", MA Thesis, Faculty of Art Education, Helwan University

⁶ -. Alexander Rushka, translated by: Ghassan Abdel Hay, "Public and Private Creativity", The World of Knowledge Magazine, Issue 144, December 1989, p87.

⁷ - Shaker Abdel-Hamid, "Aesthetic Preference - A Psychological Study of Aesthetic Appreciation," The World of Knowledge Magazine, Issue No. 267, January 1978, National Council for Culture, Arts and Literature, Kuwait, p314.

From the above, the following questions wear formulated:

- Can the curricula and plans for teaching art education, including the items- it includes- in the field of design in the pre-university education stage, in its current status, represent an integrated model for the graduation of a student who has an artistic and aesthetic awareness, and has the capacity for creativity and innovation according to the requirements of the age, and in line with societal trends towards Digitization?
- Does the use of modern graphics programs in processing the motifs and ornamental designs contribute to creating a suitable field for creativity and innovation for students of art in pre-university education stages?
- Is it possible to develop the mental abilities and skills of art students, and to provide them with technological expertise, with an emphasis on the constants of heritage, pride in nationalism, history, and the preservation of identity?

Through the previous questions, the research problem can be summarized as follows:

Research problem:

How widely can graphic apps be used on tablets and smart phones to process ornamental designs and 2D motifs, to produce animated films that are new, authentic, and innovative?

Research hypothesis:

The use of graphic applications on tablets and Smart phones in the processing of ornamental designs and 2D motifs contributes to the production of animated films characterized by novelty, authenticity, and innovation.

Research goals:

- Developing the abilities of students from the intellectual art classes, skills, and providing them with technological expertise while emphasizing the constants of heritage, pride in nationalism, history, and preservation of identity.
- The use of modern Graphic programs in the processing of motives and ornamental designs in creating a suitable atmosphere for creativity and innovation in the art teachers of students through the production of animated films characterized by glory, originality, and innovation.

Research importance:

- Shedding light on the importance of making a breakthrough in dealing with the arts and teaching it, especially design, and especially for young people, while not forgetting identity, nationalism and heritage because it is the way to uniqueness and distinction.
- Providing students with an opportunity to approach and experiment with technology, in a way that contributes to expanding their perceptions and creating a fertile field for creativity and innovation.
- Enriching the field of design and teaching it with a different direction and

vision, and creating ways for creativity stemming from the requirements of the technological revolution and meeting the requirements of the digital age of intellectual and educational variables.

Research Methodology: ***Theoretical framework***

The research followed the descriptive and analytical method in testing the validity of the research hypothesis and achieving its objectives as follows:

- A study and analysis of digital art, its meaning, importance, origin, types, and ways to benefit from it in the field of ornamental design.
- A study and analysis of art education curricula in pre-university education - general education - and the location of the design subject in it in terms of the relevance of its content, its adaptation to the requirements of the era of digitization and digital transformation, and the extent to which the design curriculum in it achieves the goals achieved for that.
- Defining the frameworks and extracting the procedures to be followed in implementing the research experiment.

Practical framework

The research followed the experimental method in *conducting the experiment as follows:*

Research experience:

The research experiment was conducted according to several criteria and procedures, which are summarized as follows:

- The commitment to explain the theoretical curriculum contained in the academic curricula in the high school classes of the first, second, and third secondary education, including the arts of ancient Egyptian civilizations, folk arts, Coptic art, as well as Islamic art, in addition to studying the characteristics of the works of some contemporary artists such as Mahmud Mukhtar and Ragheb Ayyad, with the aim of associating student with identity, nationalism, and heritage and confirming it, and as a basis for originality and uniqueness in the product to be implemented.
- Explaining design concept, its elements, basis, characteristics, properties, methods of formulating ornamental elements, and ways to implement ornamental panels in various directions.
- The student should compose a story inspired by its idea and its elements from what he has learned from his study and analysis of the arts in previous civilizations and Egyptian artists, or through the individual considers of problems of his surroundings, whether social or human.
- The learner implements the elements of the story and its backgrounds as independent motifs, drawing and coloring, taking into account the achievement of the ornamental design criteria in formulation, coloring and proportions - which achieves the actual application and the desired artistic goals of studying design for this age according to the current teaching curriculum.

- Provide the opportunity for learners to work individually or in groups, according to their desires.
- Explain the capabilities and properties of one of the graphic programs - Pic Bac - and how it is used in the application of the experiment.
- The learner / learners use the program's applications in processing the elements and motifs - which were previously designed and implemented manually - to produce the animation film that was composed according to the aforementioned criteria.

Research limits:

The research experience was limited to producing animated films based on the treatment of ornamental designs and two-dimensional motifs, which students produced by hand, through the use of Pic Bac applications for the following reasons:

- The Ease of use of the program, in line with the age stage.
- Available for installation on all tablet devices systems - which always available with students in this age according to the Egyptian Ministry of Education directions for digital transformation in education - and smart phones - and it is available with all students also for the same purpose.
- The program has a free version available on the Internet, which allows learners to install it through their connection to the network during their presence in schools, and is also distinguished by its small size and speed.
- The implementation of the experiment was carried out on ornamental design in terms of suitability of ideas, methods of formulating elements and motifs, and images, animation, and multimedia were used as the most appropriate types of digital art to implement the experiment in the field of design.

Research sample:

- It is worth to say that the experiment was implemented at the wide of all schools of educational departments in the Directorate of Education in Cairo Governorate, which numbered 32 departments, and in all educational stages, and different types of digital art were used, such as digital drawing, digital photography, video clips, animation, and multimedia.
- The researcher tended to implement the experiment on students in the secondary stage of general education in its three stages in the age group of 15-17 years using both video clips, pictures, animations, and multiple media methods of digital art as previously mentioned, in cooperation with the art education directors in one of the departments Education in one of the public education schools in Cairo over the course of three academic years 2016-2017, 2017-2018, 2019-2020 - to ensure the validity of its results and analyze them accurately - for the following reasons:
- Appropriateness of the age stage with its mental and skill capabilities to produce ornamental designs related to the artistic heritage and to treatment contemporary social issues and produce them in a three dimensional appearance.
- The curriculum for that stage includes a study of ancient Egyptian heritage and contemporary Egyptian art in theory.

- The subject of art education in the secondary education stage is an optional subject - whereby the learner is allowed to choose between more than one subject to study, including art education - and therefore the application of the experience works to develop the skills, tendencies and talents of students who prefer studying art education, and gives them a wide scope for creativity and innovation.

Research terms:

- **Digital art**: *digital arts are procedurally defined as: arts produced by digital processors on the computer, through special programs for creating designs and drawings* ⁽⁸⁾.
- **Creativity**: Refers to the ability to create, and Rubens' definition of creativity came as the ability to collect ideas and transfer them in a unique way, or to make unusual connections between these ideas. Creativity is also defined as regeneration as restructuring or re-working of new ideas to bring about something new, and a conclusion is reached to a solution to a problem, or to a new idea and its application, and that creativity is the part associated with the implementation or transformation from the idea to the product ⁽⁹⁾.
- **Innovation**: “It is a mental capacity in which a person tries to produce (an idea, a mean, a tool, a method ... etc.) that did not exist before, or it's a major development of it without limitation. (Gel Ford) believes that innovation is a change of thinking, and (Rogers) defined Innovation as the emergence of new production resulting from an interaction between the person and matter, and some have considered it to be a new creation of something that depends in its composition on essentially existing things ⁽¹⁰⁾.
- **Originality**: “It is the unfamiliar production that no one has ever seen, and the idea is called original if it is not subject to common ideas and is distinguished by excellence” ⁽¹¹⁾.
- **ornamental design**: “It is a work of art with two or three dimensions, as it may contain the fourth dimension (time) or the fifth (movement), and it is a shape in space that is linked and affected by each of the work idea and the artist’s vision and its different motifs, and it uses each of the elements, processes and basics of design In addition to the various materials and techniques to achieve a goal or idea predetermined by the designer through the design process, then the ornamental design is a material mediator for an idea that the artist sends and receives by the recipient.”⁽¹²⁾.

⁸ - Shazah Ibrahim Al-Asqa, “The Use of Digital Possibilities on Artwork with Resin Material to Root the Islamic Identity”, research published in the Jordanian Journal of Arts, Volume 13, Issue 1, 2020, p35.

⁹ - . Muhammad Halasa, Principles and Classifications of Creativity and Innovation and their Importance to the Contemporary artwork System, Research published in the Journal of Human Sciences, Sixth Issue, December 2016, p282.

¹⁰ - Previous reference, p 284.

¹¹ - <https://ar.wikipedia.org/wiki/creation>

¹²- . Iman Muhammad Ali Nawar, “Entrances for innovating and forming plastic motifs in the field of ornamental panel design”, unpublished master's thesis, Faculty of Specific Education, Ain Shams University, 2001.p156 .

- **Experimentation**: It is one of the methods of artistic performance, and a creative activity that may be in the group of layouts that preceded the completion of the artistic work searching for different plastic or new creative aspects, and it may be in showing different aesthetic visions of the subject, which prepares the mind and the sense for plastic practice in search of multiple and different solutions Either within the framework of the artist's present experience, or as a result of the artist passing through previous artistic experiences, so he presents new solutions with innovative designs. ⁽¹³⁾

Results and recommendations:

Research results:

- The trend to change school curricula, especially with the design branch, ways of treating ideas, and their content enhances the positive behavioral motives of students towards the subject, and stimulates their imaginations and minds towards the production of purposeful and distinctive works of art with novelty and originality.
- The tendency to change the template and styles of teaching art in general, and ornamental design in particular in line with technological innovations, contributes in creating an area for creativity and distinction among art students and learners in the secondary stage of general pre-university education.
- The use of modern technology applications enhances the attachment to cultural identity and the problems of society by expressing them or finding solutions to them, and creates opportunities for innovation and originality of production for learners in an unconventional ways through their production.

Recommendations:

- The necessity of a trend to change the content of technical education curricula, and the patterns of dealing with it in the pre-university education stage - general secondary education - with attention to developing a strategy for design, and linking its teaching objectives with the state's goals towards digitalization, and the use of technology applications.
- The necessity of studying and analyzing contemporary global trends to modernize art education curricula and methods, as they are a rich source for the development of art's programs of all kinds.
- Art curricula must include many original artistic subjects, and depends on the use of different materials and subjects and various teaching approaches as well, taking into account individual differences, preparations, and differences in the student's levels, with the aim of providing art students with high and varied artistic skills and evaluating them.
- Conducting more applied experiments on computer graphics programs in the field of design and ornamental design in the different pre-university education stages.

¹³ – Hoda Ahmed Zaki Al-Sayed: "The Experimental Concept in Modern painting and Its Innovative and Educational Methods", PhD Thesis, Faculty of Art Education, Helwan University, 1979, p 27.

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1. Danae HL, "what's digital art? Definition and scope of the new media.

Web sites:

<https://ar.wikipedia.org/wiki/creation>

Samples of research results

Table1- a project discuss an ancient Egyptian thought

| Project title | The Myth of Resurrection and Arithmetic | Year of implementation | 2019/ 2020 | Type of project | In group |
|---------------|--|------------------------|------------|-----------------|----------|
| Project idea | <p>The idea of the project is based on the prevailing belief in the ancient Egyptian civilization about the resurrection and calculation after death and the film embodies that idea, where the two studies designed the elements and background in a way derived from the ancient Egyptian civilization, as the colors were chosen according to that standard The story was carried out in the style of animation and photography of each movement using pic pac and assembling all the movements through the video to produce the film, with the placement of the appropriate soundtrack inspired by paranoiac civilization, and writing the tatter at the beginning of the film in an appropriate artistic form</p> | | | | |

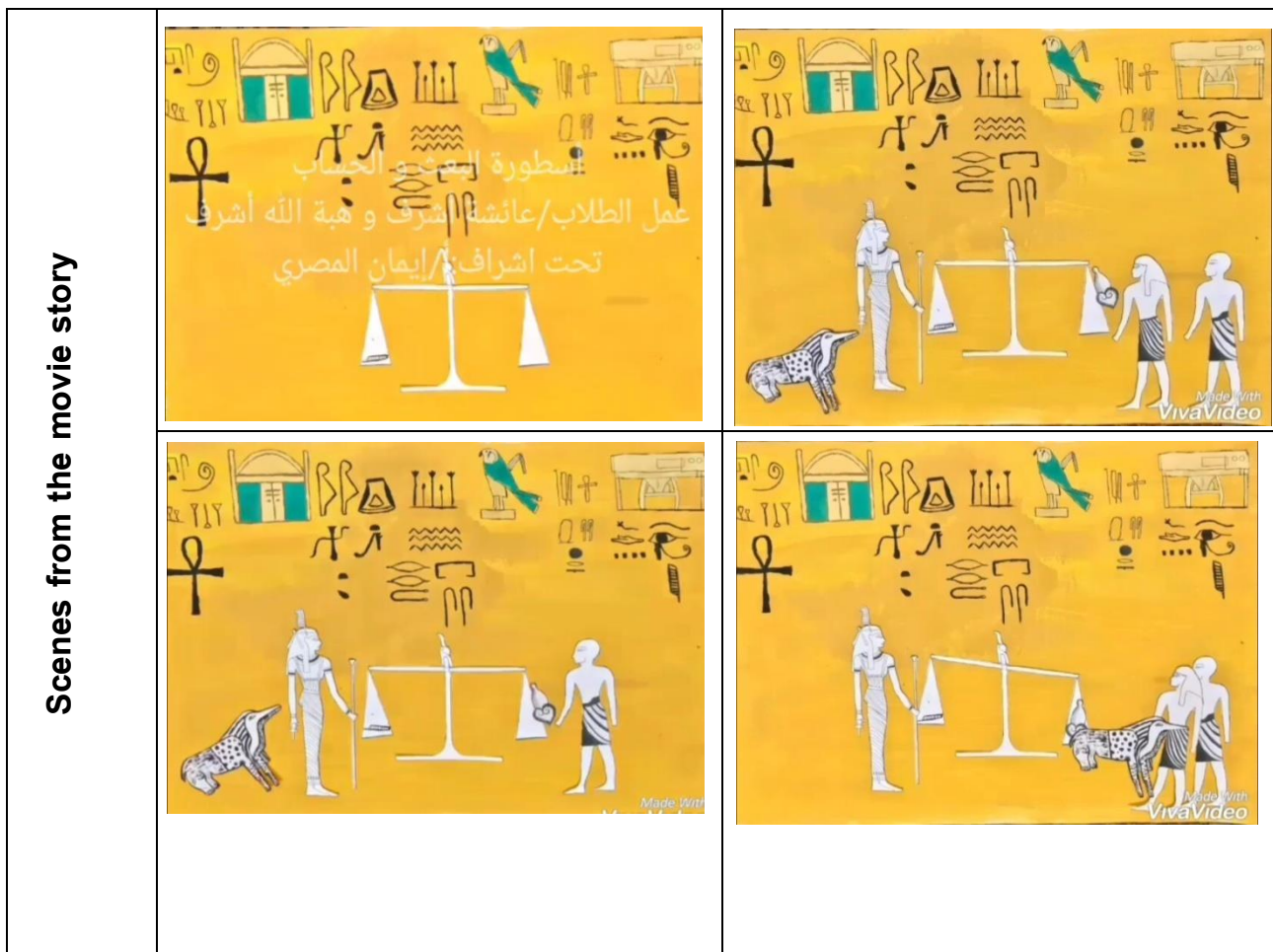


Table2- A Project Discuss One of Egyptian Society Problems

| Project title | The Weird | Year of implementation | 2019/ 2020 | Type of project | individual |
|---------------------|---|------------------------|---------------|-----------------|------------|
| Project idea | The study was inspired by the idea of its project from one of the problems facing The Egyptian society which is the illegal migration and the suffering sought by young people, fatigue, and problems in the country to which they go and expressed them through the single migratory bird, and inspired through the single lady who represents the country - Egypt- or The mother welcomed them with joy and embraced them in her reference and invited them to work and strive in their country to achieve their self and achieve progress and prosperity through them. According to the theoretical study of popular art and its | | | | |

| | | |
|-----------------------------|--|---|
| | motives and decorations. | |
| Scenes from the movie story |  |  |
| |  |  |

Table3- A Project Discuss the Value of Loyal

| Project title | The loyal | Year of implementation | 2019/ 2020 | Type of project | individual |
|---------------|--|------------------------|------------|-----------------|------------|
| Project idea | The idea of the project is based on the expression of the value of loyalty and its importance in human life through the relationship between human beings and other beings, and the elements of the story and its motives and backgrounds have been formulated according to the study of the characteristics of Islamic arts, taking into account the achievement of decorative characteristics in the formulations, as the appropriate soundtrack of the idea and the formulation of the tatter and the way it moves on the | | | | |







| | | |
|-----------------------------|---|--|
| | beginning of the story. | |
| Scenes from the movie story |  |  |
| |  |  |
| |  |  |

Table4- A PROJECT DISCUS PEACE PROBLEM IN ARAB AREA

| | | | | | |
|---------------|----------------|------------------------|------------|-----------------|----------|
| Project title | The Arab Dream | Year of implementation | 2017/ 2018 | Type of project | In group |
|---------------|----------------|------------------------|------------|-----------------|----------|











| | | |
|---|---|--|
| <p>Project idea</p> | <p>The scholars were inspired by the idea of the project from the current events and the revolutions and cracks that led to the division and fragmentation, which called for a message through the idea of their project and called for unity and cooperation to face the dangers surrounding, and the elements were formulated in a decorative style inspired by the characteristics of popular art, and some of its elements.</p> | |
| <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Scenes from the movie story</p> |  |  |
| |  |  |

Table5- A PROJECT DISCUS AN ARABIC IDIOM

| Project title | Hidden Nostalgia | Year of implementation | 2016/ 2017 | Type of project | In group |
|-----------------------------|---|------------------------|--|-----------------|----------|
| Project idea | <p>The working group was inspired by the meaning and significance of one of the idioms or stories derived from the people's heritage for the purpose of extracting one of the attributes of greed, and the scholars took into account the formulation of elements, motives and backgrounds in ways that correspond to the idea of work, and correspond to the characteristics of the folk art, in addition to achieving the characteristics of ornamental design in terms of formulations and colors.</p> | | | | |
| Scenes from the movie story |  | |  | | |
| |  | |  | | |
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