

Cirigami art as a starting point for designing metal crafts to develop productive thinking for art education students

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Research introduction:

The pursuit of innovation in the field of metalwork is one of the most important issues that artists care about in this field, in keeping with the times with all its cultural, social and economic data. It also affects technical and intellectual progress through the expression of contemporary philosophy that calls for the rejection of imitation and the search for development and renewal in the field of metal works in terms of form and content.

“The artist needs a great deal of flexibility, imagination, mental and physical freedom, the ability to intonation, symbolic thinking, ramifications, analysis, visual installation, and above all, a superior ability to sense the stimuli of reality and its components”.

Therefore, one of the most important characteristics of good metalwork is that it is innovative, meaning that it is new and unfamiliar and there are no repetition or transmission that appear in it. Therefore, it was important and necessary for the artist to always search for development through understanding and containing of previous experiences and reformulating them again to help in creating forms and entrances. A new design that reflects concepts and ideas of the artist and helps to raise taste and aesthetic sense.

One of the things that this research is concerned with is the extent to which metal works are suitable for the era in which we produce, which is governed by the standards of artistic innovation, which is the basis of the formation language loaded with the artist's own experience to be formulated in a way different from the usual use of arts to be formed on a paper, which is the art of kirigami (the art of paper cutting) and to identify its technical characteristics and aesthetics, in creating a design for metal works and implementing them by publishing and transcribing works of the students of the second year, Department of Art Education, Faculty of Specific Education, in order to open various horizons for design and implementation in the world of minerals with the diversity of its ores and data, and to emphasize the development of productive thinking for students.

Field of metalworking is one of the technical fields that provide the opportunity for contemplation, thinking, innovation and dealing with many materials, and tools because of the technical expertise it contains, which in turn may help in realizing innovative solutions in the construction of metalwork.

Research problem:

By observing the students' practical applications in the metalwork course for the second year, Art Education Department, at Faculty of Specific Education, the researcher found shortcomings regarding (the innovative side of students) to create various designs that students design by themselves to implement them in an exercise carried out by publishing and unloading according to the description of the Metalwork course in Art Education Department of the college and I have the students' accreditation to download these designs from the internet.

Therefore, the research problem is summarized in the following question:

To what extent can **Kirigami art act as a starting point for designing metal crafts to develop productive thinking for art education students?**

Research importance:

- 1- Developing design and plastic solutions for the student to implement metal work carried out by publishing and unloading.
- 2- Offering multiple and varied approaches in the field of metal formation for art education students to implement metal works carried out by publishing and unloading list on the art of kirigami.
- 3- Introducing new design approaches with different methods in the field of metal works for students of Art Education Department.
- 4- Enriching the fine aspect and artistic vision of students to design metal works.
- 5- Enriching the innovative and productive thinking of art education students by using the art of kirigami.

Research aims:

- 1- Revealing the aesthetics of the art of kirigami and benefiting from it in creating various designs for metalwork executed by publishing and unloading.
- 2- Achieving fluency and flexibility in designing metal artifacts by publishing and unloading, using the art of kirigami.
- 3- Finding a design approach for art education students that depends on the art of kirigami to develop their innovative and productive sides.

Research hypotheses.

- 1- The possibility of creating various designs based on the art of kirigami and benefiting from them in the field of metalworking for art education students.
- 2- Develop students' design abilities by using the art of kirigami to implement metalwork carried out by sawing and unpacking.
- 3- Inspiration from the art of kirigami contributes to the development of productive thinking for art education students.

Search terms.

1-The art of Kirigami.

An art type of plastic arts that cuts flat paper and turns it into stereoscopic or flat shapes.

It is one of the ancient Japanese arts and a branch of the art of paper folding (origami), but using cutting or gluing and installation to make accurate, complex and innovative shapes.

It is an ancient Japanese art that produces multiple and beautiful shapes, starting with flat, hollow shapes, passing through stereoscopic shapes, and ending with the complex shapes of animals and natural shapes.

Productive Thinking.

It is an important development of thinking. It is a practical application that helps individuals to understand and plan in a clear and effective way. It combines creative and critical thinking skills to produce new ideas.

It is a mental process, in which sensory perception interacts with experience, and requires a set of abilities or skills, and seeks to discover new relationships, or unfamiliar ways, to achieve a specific goal, with internal or external motives, or both.

Productive thinking can be defined as the discovery of new relationships or unfamiliar ways. It requires a set of abilities or skills that include fluency, flexibility, originality, expansion, and imagination.

Metal art work.

They are the works that depend in their formulation on metallic ores, and are formulated according to the design to be implemented using methods and techniques of metal formation.

Publishing and unpacking.

This technique is used in metal cutting when the design requires unloading from the inside, and the metal cut by the saw is transformed into a blade at the point of work of the saw, and in this way we obtain a clean cut that requires only a small amount of finishing and at the same time only a small amount of the material is lost. The use of this technique depends on the jigsaw and the thickness of the weapon used in the sawing process straight or curved to cut the metal. The cutting is done in the outer lines of the metal or the interior after piercing it to make internal spaces. If the starting point is connected to the end, the unloading is done by removing the metal part that is trapped between them to create a vacuum and this is done according to the design subject that is going to be implemented.

Search limits :

Objective limits: Using the art of Kirigami (symmetrical) to produce various innovative designs and use them to implement an exercise carried out by sawing and unloading using aluminum ore.

Spatial and temporal limits: The experiment is carried out in the metalworking workshop at the Faculty of Specific Education with students of the second year, the first semester of the academic year 2019/2020, at Department of Art Education, Faculty of Specific Education, Kafr El-Sheikh University.

Techniques: The research experience is determined in carrying out an exercise for publishing and unloading according to the description of the metalworking course for the second year of the college.

Research Methodology:

The research follows the descriptive analytical method in dealing with the theoretical side of the research.

The research follows the quasi-experimental method in the applied framework of the research.

According to the following axes:

The first axis is the theoretical framework and it includes:

The concept of kirigami art, its types, and the artistic and aesthetic foundations of this art.

The role of kirigami in developing productive thinking, its role in the creative process, the concept of productive thinking and its steps.

The second axis: the application framework and it includes:

Implementation of an exercise in publishing and unloading using the art of Kirigami and its implementation using aluminum.

Results:

1- It was reached to develop various designs characterized by innovation and diversity based on the art of Kirigami.

1- Develop students' productive thinking by producing a variety of designs based on the Kirigami style, which are suitable for publishing and unpacking.

2- It was possible to implement various models implemented by sawing and unloading using aluminum ore.

3- The use of the art and applications of Kirigami resulted in a great diversity of design ideas and related solutions.

4- Developing innovative and productive thinking among students through application, experimentation, and inspiration from other arts, which contributed to increasing their achievement, innovation and design diversity.

Recommendations:

1- Researching modern artistic trends with ancient historical origins, such as the art of Kirigami, because of their role in enriching the design process and benefiting from it in the field of design and metal formation.

2- Conducting more studies and researches dealing with the aesthetics of Kirigami art.

3- Interest in studying the arts of paper folding as a rich source of innovation in the field of design and metal formation.

4- Opening a space for students to draw inspiration from other arts, which will lead to the field of metal works with renewal and development.

5- Paying attention to the innovative aspects and providing an atmosphere of freedom during design in order to develop innovative and design skills for students.

6- Develop productive thinking skills for art education students and find alternatives and design solutions to serve the field of metalwork.

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