

Textile technology and its complementary design role in interior architecture

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Abstract

In view of the recent development in the field of arts in all its fields due to technology and its impact on the culture of society, and the remarkable development, especially on the design thought of the elements of interior architecture complementary to interior design, to keep pace with the rhythm of the technology of the age of endless aspirations for the shape and style of design that has become different and transformed from everything He is familiar and stereotyped. Weaving is considered one of the most important materials used in the arts in general and especially in interior design, and smart weaving has been applied and the use of nanotechnology with it in several areas of interior design, such as cladding pieces of furniture for seats, sofas, curtains, textile hangings, whether lighting units, hanging dividers, carpets, and other uses for the interior design field. . Weaving is one of the most important design complements in interior architecture. The visual impact of design complements is related to the material that makes up the visual surface. Also, smart materials can be used in different ways as energy transformers or as mechanical actuators, in addition to the basic function for which they are designed.

The change and transformation that occurs in the material to become a smart or sustainable material to keep pace with the continuous technological development as a result of what brought about the technological revolution and the digital revolution in the field of interior design. The interior is an interactive space or the environment is interactive that needs to use smart materials that serve the requirements of a person in his living environment. It is the most important example. For smart weaving applications, nanotechnology weaving, wood folding fabric, polyester episiotomy fabric, magnetic origami curtains, composite memory fabric, digital blinds, textiles incorporated with phosphorous walls, all of them are composite materials and interactive products that interact with the surrounding environment to provide a better internal space for humans. The smart weaving realizes the idea of a complete transformation in the interior design as a whole within the design elements because it is a basic complement to the design process within the design environment.

Keywords

Textile, Technology, Complementary, Design, Interior Architecture

Introduction

The digital revolution and the information revolution have affected the development of interior architecture in all its fields, and this development has been significantly reflected in the design thinking of the elements of interior architecture that complement the interior design, to evaluate a set of designs that translate the rhythm of today's technology, and reflect the endless aspirations of the form and style of designing the internal environment of the interior space.

Different from all that is familiar and stereotyped. The tremendous development in the design of smart interior design supplements, which was produced by the digital revolution, was the result of the merging of scientific technology and the synergy of all sciences, including industrial design, with interior design, in a way that allows the production of designs for new elements that express the trends of the advanced technological era through the functional and formal content. One of the most important elements that influence stereotaxic is considered to be the complement to interior design. Architectural trends also have a vital impact on interior design thought, depending on the trends of architecture. The interior design elements are responsible for giving the appropriate appearance to the space and the interior space. And that the great development in the techniques used in interior architecture followed a similar development in interior architecture, so the space became more complex than before, which affected the design thought. The design of the complementary spaces

is influenced by the design elements to meet the human and functional purpose of the design.

Research Problem:

The increased need for access to contemporary designs that depend on the design thinking developed to meet the needs of the users of the internal space after the emergence of technology in all areas surrounding the internal and external environment of the human being.

Theoretical Framework:

1. The implications of the technological revolution on the interior design using smartmaterials:

Since the end of the twentieth century, aspirations have increased for a more modern and flexible lifestyle, and at the same time, advanced technologies, artificial intelligence and robots have witnessed great leaps in progress. The information revolution has greatly affected all fields, especially interior design using the Internet.

And smart tools. Thanks to the maturity of technology in its process and its economic viability, and due to industry standards, increased market demand, significant cost reductions, and the presence of technology more than ever before, internal designers have been motivated to develop design concepts capable of integrating smart systems supported by an increase in smartmaterials, smart devices and devices as well as auxiliary devices.

Wider Internet connection networks. The smart internal environment aims to comfort the users and occupants of the vacuum while controlling the consumption of resources and energy.

2. What is smart design in interior design:

Smart design is characterized by the ability to rationalize resources and reduce operational costs as the smart interior design provides fast, flexible and economical responses and identifies the most effective strategies to provide a comfortable and productive environment. It can be measured by integration in integrating the interior design with smart solutions with the internal or external environment of the space and to be flexible and easy to adapt to different variables to accommodate the requirements of new technology in order to improve energy use through the use of smart materials and materials, especially furnishings and lighting that help to adapt to the interior design. Thus, an increase in comfort the occupants of the vacuum and their satisfaction with the environment around them.

1. **Raw materials and smart materials and their relationship to interior design:** - Smart ores are raw materials that have the ability to respond to stimuli from the internal and external environment and have the ability to perceive and sense various stimuli and adapt to them. These stimuli may be electrical, chemical, or magnetic. The visual effect of the design elements of the interior design is related to the material that composes the visible surface, so the effect has a great role in identifying things and determining what they are, for example, stone gives a sense of stability, strength and roughness, wood gives a sense of warmth, and metal gives a sense of solidity and strength.

All of these materials are stable in properties and are classified as traditional materials, unlike raw materials and smart materials that came to express a new form for designers and users of internal space, for example, smart materials can make the most of the energy flow in terms of consuming it directly or indirectly with the surrounding environment.

The necessity of using smart materials is increasing at the present time in pursuit of innovative solutions, composite materials and interactive products that interact with the surrounding environment, thus increasing the global need for high-cost energy sources in addition to the need for raw materials. Thus, the vision will change for architectural engineering as architectural designs, depending on the widespread use of smart materials and visual effects for future products. The term smart materials is a new term in the field of raw materials and products with changing specifications and characterized by the possibility of changing the shape or color in an opposite way in response to a physical or chemical indicator, such as light, heat and electric field applications, while non-smart materials do not contain these distinctive properties. We apply the name functional materials to all smart materials, and smart materials are usually described as adaptive because of their characteristics that are subject to modification. It is also a reciprocal relationship between materials and systems. Intelligent materials and smart systems are those things that sense environmental events and perform operations on that information that they have obtained and then influence the surrounding environment, meaning that they are materials that have the ability to face any external emergency with the aim of responding

to environmental stimuli and changes. A change in one of the characteristics of smart materials, such as changing some photovoltaic compounds, such as chromium, which affects the color of the material in an opposite way, in response to the physical and chemical influence, so that a change in several properties may occur at the same time by means of a catalyst resulting from a response to a certain action. Also, many materials can be mixed with intrinsic properties to create variable characteristics Physical and chemical variables are also basic motivational elements for smart material changes. The use of raw materials with variable properties is not new, as humans have used hot water with wood since ancient times to stimulate Swell Split to split by swelling to change the length of two different types of metals interconnected with electric heat switches with the onset of the digital revolution. One of the main features of smart materials is the speed of response and its multiplicity as It responds to more than one environmental condition at the same time, there are materials that change color, temperature, or movement, and these characteristics are often applied by most of the smart materials, including the fabric, as it is the basis of the interior design.

1. The Concept of Smart Tissue:

The textile element is one of the important elements in the materials that complement the design process of the interior architecture, and it is important to take advantage of the characteristics of smart fabric in the interior design as an alternative to the traditional weaving. Smart tissue is a tissue that is able to interact and adapt to the surrounding environment by weaving, merging, or integrating smart materials into a form of images in the structural structure of the tissue, and the

structural structure of smart tissue consists of two basic components, namely the sensors and actuators. There is a diagram of a diagram showing the types of smart tissue.

Diagram shows the classification of smart tissue and the types of its variants:

Smart weaving can achieve the idea of a complete transformation in the design and contribute to achieving energy efficiency, as in some curtains and textile claddings. The simplest example of this is that the vacuum senses that there are no people inside the space and sends signals to the control device to make the level of industrial lighting at its lowest level or to close it completely . Or for the tissue to recognize the presence of the person by sitting on the piece of furniture covered with smart woven and turning its color. This example is considered to be the super-intelligent fabric that came after the active smart tissue that has customers with sensors and actuators that work according to For signals accessed through a control unit. As well as non-reactive fabric that only feels the environment and its effect, such as optical fibers and conductive fabrics.

Textiles combined with phosphorescent walls:

These textiles are used in the design of phosphorescent lighting units or the design of interior partitions and curtains or wall treatments where the light emitted from the phosphorous strings reflects during the night through the adjacent metallic strings in order to increase the effect of the lighting and the hardness of the metal allows the creation of multiple forms of fabric through Manually. Explain to him the work of the weaving.

Thermally Variable:

It is a fabric made of thermo chromatic materials that respond to temperature changes and are used as photo chromatic materials and their applications appear in the various furniture units, such as sofas and chairs, as well as in the form and binding materials. When a person sits, he will leave a fingerprint from various parts of the body until it cools and returns to its natural state, as the black color moves to blue and red, then to purple and with temperature fluctuations the colors and shades also change.

Anomaly Fabrics:

They are fabrics that allow for colorful lighting or moving images. They are arrays of tight-fitting, lightweight, flexible bed-LED two-valve arrays. Each matrix contains red, blue and green lights, so the electrical paths run on the plastic substrate connecting this matrix, allowing each micro-unit to process the light intensity of the three lamps in order to produce the desired color. The LED lights also cover layers of transparent material to work on integrating the lights with each other, allowing it to be seen in daylight. It offers colorful visual patterns, dynamic images, or even full-color animation to create different lighting effects. These fabrics are characterized by softness and flexibility as well as durability and these fabrics are made of a transparent pocket of water-resistant materials for use in applications that are exposed to rain or liquid spills, and to clean them, dry cleaning of fabrics is used. As for panels and electronics Batteries can be easily removed from the layers of fabric before the cleaning process begins and replaced directly. There are sofas where this technology was used and include materials that have been combined with the white upholstery fabric to create a lighting compound. LED fabric and when Lumalive is turned off cannot be distinguished from normal fabric. That allows lumalive to display images or colored lights.

Illuminated Curtains:

Light curtains wire blinds for lighting work to create ambient lighting inside the space and there is a kind of illuminated curtains that depend on the use of innovative technology, and use a fabric that contains optical fibers, and the movement of these curtains can be controlled by remote control tools.

We notice an increase in consumption and it has reached its limits in the environment that may lead to its destruction, and it has become a burden on the environment to get rid of with increasing Research and studies on issues related to the environment has led to an increase in the awareness of generations in rationalizing energy use and preserving the environment, managing natural resources, economic and social development and preserving cultural heritage. Therefore, the concept of sustainability is required to be applied in design.

The creative industries work on linking the economy, culture and technology, and it includes knowledge-based activities that are related to culture and creativity, for example publishing, music, cinema, crafts and design, and creativity depends on the interaction between cultures, disciplines, heritage and Merging creativity and innovation with modern technology. Sustainable development is a process that takes care of meeting current and future human needs without damaging or disturbing the environment. On the other hand, art had its own role in preserving resources and in response to the industrial movement of different ores and materials and shaping them, and showing the importance of their use. The design movement for sustainable advertising was affected in terms of promoting the advertising message or using environmentally friendly materials, so art is the mirror.

Society, therefore, advertising companies have accelerated to achieve efficient use of resources on the one hand because they realize the importance of the resource-rich environment and limit the damage caused by the outputs of the consumption process, and on the other hand, reduce the expenditures used in advertising, so many types and forms of creative industries appeared that used resources of all kinds so that it was possible Use it in advertising, and thus Promote the advertising message in terms of the communication process, as well as economic and environmental.

Research Problem

In light of the lack of awareness of the resources that we possess and the progress that current societies are experiencing, the role of advertising has become greater than just promoting a product, so it is necessary to take advantage of the resources that characterize our country of all kinds in creating a kind of artistic creativity that is done through the application of the concept of sustainability in Advertising design that performs its aesthetic and applied function on the one hand, as one of the forms of industries On the other hand, it spreads creativity and aesthetic awareness. Hence, the research problem is summarized in a group of research questions, namely:

How can new opportunities and horizons be found from the creative industries as an economic stimulus?

How can sustainability be applied in design to enhance advertising?

Can advertising be a method of spreading awareness of the importance of the environment through its use in design?

Green Economy:

According to the United Nations Environment Program, “It is an economy in which an improvement in human well-being and social equality results in a significant reduction in environmental risks and ecological scarcity of resources. We can look at the green economy in its simplest form, which is an economy that reduces emissions. It has a heavy and more efficient use of resources and accommodates all age groups.

Sustainability:

According to the Cambridge Dictionary, "the ability to persist over a period of time"

The environmental aspect "causes little or no harm to the environment and is therefore able to last for a long time"

What is sustainability?

Sustainability is the study of how natural systems function, diversity and production of everything that the natural environment needs in order to remain in balance. We live in a modern, civilized world where we consume a lot of natural resources every day. In city centers, we consume a lot more energy than we consume in the countryside, as city lights remain on, and equipment, electrical appliances, heaters and other equipment that need electrical energy are used. This is not intended to say that sustainable living should focus only on people who live in cities, but rather that improvements should be made everywhere (it is estimated that we consume about 04% of resources annually more than we can possibly) and that this needs to make changes to maintain the sustainability of these.

Resources Sustainability and sustainable development focus on the balance between calculating needs, our need to use technology economically, and the need to protect the environments in which we live. Sustainability is not only related to the environment, but rather it is related to the health of societies and ensuring that people are not subjected to suffering due to environmental legislation, with the necessity to examine the long-term effects of human actions, and ask questions about: How can the situation be improved.

Sustainability History:

From the beginning of creation, right up to the agricultural revolution and perhaps before that, mankind has been a consumer rather than a producer of environmental resources. Starting with primitive societies that used to move from one place to another in search of sources of subsistence in the seasons, and before the establishment of the camps, they returned to the same place every year, and the development has led to an increase in settlement and stability, as agriculture replaced grazing, and evolution this is to build villages, towns and cities that are putting more pressure on the environment. Although some philosophers of civilization and the Enlightenment expressed concern about resources and population growth and whether this could be sustainable in the long run, these researchers and philosophers did not receive a serious acceptance at that time and this did not exceed more than hypotheses. And it happened in the twentieth century before we realized our impact on the environment and the damage we cause, pollution, soil erosion, logging, and emissions.

Gases and other environmental issues have led to increased concern for the environment and the potential damage to nature's system. The United Nations was established after the Second World War (year 1945), and UNESCO was established with the aim of promoting the importance of human culture and science. At the present time, the commitment (to contribute to peace building, poverty eradication, sustainable development, and that includes dialogues through education). (Education, science, culture, communication and information). In the late twentieth century, the science of climate change was established. We realize that in the eighties of the last century there were problems the effects of agricultural greenhouses and the destruction of the ozone layer, and this led to an awareness of the concept of resources - especially natural fuels - which requires unremitting efforts to use renewable energy methods. After that, we have witnessed an evolution in the social, economic, scientific and environmental sciences. 5

The Three Elements of Sustainability:

Environmental Sustainability: Preserving environmental integrity, every earth's environment is maintaining the equilibrium of the systems while the natural resources within are consumed by humans at a rate they are able to replenish themselves.

Economic sustainability: Human societies around the world are able to maintain their independence and have access to the resources that they require, financial and otherwise, to meet their needs. Systems are healthy and activities are available to all, such as safe environmental livelihoods.

Social Sustainability: Universal human rights and basic necessities are achievable by all people, who have access to adequate resources in the system to keep their families and communities healthy and safe. Healthy societies only have leaders who guarantee personality, work and cultural rights are respected and all people are protected from discrimination.

Sustainable advertising:

Green advertising is a specific type of advertisement that centers around promoting factors related to the environment. Often times, companies that use green advertising use environmentally friendly processes and product packaging also. Sustainability ads have been used to advertise customers to sustainable products, services and actions. It not only focuses on environmental issues and the product or service itself, but includes communication about the entire product life cycle. Moreover, it informs about the sustainability of the producing company and communicates desired life change to the consumers. Advertising is generally a one-way communication through the media. It is used to establish brand recognition, branding, and some branding preferences. Sustainability declarations contribute to the three pillars of the triple baseline: economic development, environmental protection and responsibility.

Social, to develop documents that provide insights into the goals of sustainability advertising. They include: (UNEP) The United Nations Environment Program (UNEP) guarantees truth in advertising - advertising codes provided and supported by the advertising industry and other mechanisms to ensure that claims can be proven, to prevent consumers from misleading. "This is related to the goals of informing consumers and reassuring them whenever there are critics or misleading arguments against a specific product or service or action implemented. Ensure the ethical behavior of advertisers, so that the messages are lawful, dignified, honest and truthful. "The advertisement should not include green washing attempts and referring to various social responsibility claims. Ensure that all sectors of society, including women, minorities and adults Age and children, portrayed with sensitivity. "This relates to "the sustainability advertising challenge to address and "communicate" with different audiences through a collective media message.

Environmental, reporting and corporate social responsibility programs. "This field indicates the required cohesion whenever the message of sustainability in the advertisement is set. The advertising message and the company's behavior must be consistent to create trust and credibility. The researcher believes that the concept of sustainable advertising can be applied to the advertising medium or the concept of sustainability can be applied to the advertising message." Of the negative effects on the environment and therefore the use of environmentally friendly materials and the use of recyclable materials. If we use sustainability on the advertising message to enhance social, environmental and economic benefits and encourage thousands of individuals to change their behavior towards the environment better, it is one of the applications of sustainability in design. Here are some ideas for sustainable advertising.

Description: Every year, 544,444 marine creatures die from plastic entanglement globally. It's a big number. It's a sad number, aiming to raise awareness of the impact of plastic use in All for Blue, but it's a real number. This print advertisement was created on behalf of <https://www.hisour.com/ar/sustainability-advertising-40195/>

https://www.adsoftheworld.com/media/print/allforblue_sad_but_true

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Faculty of Art Education EFFHDI Helwan University

Marine life. We want people to rethink plastic and start using its multiple alternatives that are both environmentally friendly and beneficial.

Results:

The smart weaving realizes the idea of a complete transformation in the interior design as a whole within the design elements such as furniture, floor coverings, walls, etc., as it is complementary to the design process within the design environment. As we mentioned in the previous examples:

1. When the smart weaving identifies a person by sitting on a piece of furniture covered with some kind of smart fabric, it can send signals to the internal space control device that transforms the design to the shape that this person desires.
2. The color of the fabric or the color of the wallpaper and floor coverings may change, and the windows can be closed or opened or the air conditioner and other devices in the indoor space can be activated according to the wishes of the vacuum user, which are registered with the central control system.

3. The smart weaving can provide protection and security by sending signals that express the presence of a person different from the person whose data is registered with the control system. The most important application of this idea is the sensitive tissue chair.
4. Smart weaving can contribute to achieving energy efficiency, as curtains and textile claddings can sense that there are no people inside the place and send signals to the control device to make the level of industrial lighting at its lowest levels or close it completely.

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