

3D printing and its impact on the quality of interior design and furniture

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Abstract:

In this research, modern technologies will be identified in achieving multifunctionality and aesthetic value at the same time, three-dimensional printing is among one of these technologies, it is considered a transformation technology in the design sector and highlighted the creation of complex models with global accuracy that achieves efficiency and design innovation, it is an innovative technology in our current era, and it has revolutionized many areas of our daily life, due to which it is radically different from any conventional manufacturing technologies. Three-dimensional printing was not limited to engineering and design only, but it occupied many fields such as (industry-construction-medicine and dentistry - consumer goods – art and design-etc.).

Three-dimensional printing is a set of industrial processes in which different manufacturing materials are used and it has more than one production method and this technology is considered one of the new developments in construction and architecture printing with concrete-like material in exterior architecture and with recycled materials such as plastic in interior design and this technology helps to create opportunities to implement international projects. At the end of this study, we arrive at a set of results and recommendations that as the importance of three-dimensional printing can be emphasized .

Keywords:

(3D printing - 3D concrete printing - Interior design - Sustainability - Architecture)

Introduction:

In our current time, many technologies have appeared that contribute significantly to architecture and interior design, which have achieved many innovations, and in this research, we will address one of the best of these technologies, which is three-dimensional printing, as it received a patent in 1981 and carried the title "rapid prototyping device", three-dimensional printing is one of the fastest growing technologies in the world currently.

And the research focused on the three-dimensional technology in general and not in detail, and this research deals with the methods and types of three-dimensional printing and the usefulness of its use and how to use concrete as a building material and distinctive architectural formation, three-dimensional printing is characterized by speed in design and achieving the highest quality standards in terms of function and aesthetic form, and this technology is considered of the lowest effort, especially because it reduces the amount of time spent on construction and reduces construction wastes

The search problem:

In light of the accelerated technological progress and the emergence of modern and diverse technologies, three-dimensional printing technology has emerged as one of the important innovations that have affected various fields, including industry, construction, medicine, dentistry, consumer goods, art and design. Considering that interior design and furniture were no exception to this influence, this research seeks to explore the impact of three-dimensional printing technology on the development of interior design and furniture.

The search is wondering about:

- How much does three-dimensional printing technology have an impact on improving the quality and innovation of Interior and furniture design?
- Will there be possibility of achieving sustainability in the design and manufacturing processes using this technology?

Research assignments:

- This research imposes a significant impact on the quality of interior design and furniture on the application through three-dimensional printing technology. The study assumes that three-dimensional printing technology significantly affects the quality of interior design and furniture through its application in the design and manufacturing process.

Research objectives:

- Application of three-dimensional printing technology in interior and furniture design to ensure the achievement of aesthetic and functional aspects.
- Access to high-quality interior and furniture design models that achieve sustainability standards using three-dimensional printing technology.

Importance of the research:

-The importance of this research lies in highlighting the role of three-dimensional printing technology in making a qualitative leap in the design and quality of furniture and interior design, and clarifying the extent of the impact of this technology in promoting innovation and achieving sustainability in this field.

Research methodology:

The research follows the following approaches: -

- A theoretical study with a descriptive analytical approach, which is carried out through knowledge of the technical development of three-dimensional printing and its types. What is done in the framework of manufacturing and implementation, and the extent of its impact on the development of interior design and furniture.

- A method of deductive analysis of projects and models implemented in three-dimensional printing, design, furniture and architecture by displaying, transforming and deducing the most important advantages and disadvantages of this design.

Limits of the research:

Spatial boundaries: The spatial boundaries came for the purpose of displaying design models on three-dimensional design at the local and global levels.

Time limits: From 1981 to the present.

Concepts related to the subject of study:

Three-dimensional printing: It is considered one of the modern manufacturing techniques where the pieces are manufactured by three-dimensional divisions into small layers by means of 2D – 3d design programs. This is done by printing layer by layer and then the final shape is formed.

Three-dimensional concrete printing: It is a transition from traditional cast concrete to concrete printing and is considered a qualitative leap in design by pouring a concrete layer on another layer according to a digital model without the need to pour concrete in traditional form. This technology provides the possibility of achieving innovative and complex engineering in a precise process.

Manufacturing robots: Industrial robots are automated machines that are used in manufacturing industries instead of humans. They are faster, more accurate and can last for several days, and are considered the distinctive feature from humans as work can last for long hours without rest or work injuries.

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Steps and procedures for the research:

First: The concept and history of three-dimensional printing.

Second: The most important advantages and disadvantages of three-dimensional printing in the field of architecture, as architecture and interior design are considered two sides of one work, so it was necessary to identify its use in the field of architecture.

Third: Three-dimensional printing in the field of exterior and interior design and furniture.

Fourth: Modeling software technology for three-dimensional printing technology.

Fifth: The materials used in three-dimensional manufacturing.

Sixth: The industry is three-dimensional and its role in achieving sustainability.

Results:

- Modern technologies such as three-dimensional printing are on their way to acquiring all design and implementation methods.
- Each technology has advantages and disadvantages that must be known to determine the special needs of each project and determine what technology is suitable for it
- Modern technologies help the designer to innovate in design and ease of implementation without any obstacles.
- Achieving the best designs in terms of beauty and functional dimension with the least material possibilities and the availability of a large number of workers and minimizing the risks of work.
- Modern technologies help to learn modern technology programs such as modeling, cutting and printing software.
- Three-dimensional printing technology allows the use of many materials on a large scale and each material has its own application.
- Three-dimensional printing technology and sustainability are complementary to each other, this technology achieves many of the requirements of sustainability, environmental preservation and user health, the study of models has proven the effectiveness of using technology in architecture and sustainable interior design.

Recommendations:

- Awareness of educational institutions to be careful in providing teaching staff members who have the experience to explain modern technologies and ways to work easily.
- The state needs to direct its attention to this modern technology to make the most of it in construction and interior design, especially sustainable design.

- Encouraging researchers to publish their expertise in modern technological fields and to help them study and research everything that is new in the technological field.

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