

## **Impact of the interactive environment using hologram technology on children's cognitive developmen**

**Prof. Ashraf Hussein Ibrahim**

Professor, Department of Interior Design and Furniture - Faculty of Applied Arts -  
Helwan University

[ashrahus@yahoo.com](mailto:ashrahus@yahoo.com)

**Prof. Asmaa Abd El-gawad El-Sebaay**

Professor, Department of Interior Design and Furniture - Faculty of Applied Arts -  
Helwan University

[asmaelsebaey@hotmail.com](mailto:asmaelsebaey@hotmail.com)

**Assist. Lect. Alaa Magdy Said Abd El-Hameed**

Assestant teacher, Department of Interior Design and Furniture - Faculty of Applied  
Arts - Helwan University

[alaamagdy2009@gmail.com](mailto:alaamagdy2009@gmail.com)

### ▪ **Abstract:** .

At present, Digital technology plays an important and essential role in the formation of the child's personality. Many modern interactive technologies have emerged that contribute to the development of mental and cognitive capabilities and develop their skills in various fields. Among those interactive technologies is "hologram technology" that contributes to providing an entertaining educational environment that works. To develop the cognitive and cognitive development of the child in a simple way that attracts his attention and makes him able to assimilate the information and make use of it in the formation and building of his personality effectively.

The research is concerned with presenting the impact of the interactive environment using hologram technology on the development of the child's cognitive development by identifying the characteristics and requirements of the child's environment, how he perceives the surrounding space, and how to benefit from this interactive technology in providing an internal environment for the child that contributes to the development and development of the child's cognitive and cognitive abilities.

### ▪ **Research problem:**

1. Overlook the importance of interactive technology and its role in building the child's personality
2. The lack of the internal design of children's spaces in Egypt for hologram technology and its use in developing the child's skills

### ▪ **Research objectives:**

1. Reaching the importance of interactive interior design by using hologram technology on developing the child's skills
2. Exposing the positive side of interactive technology and how to benefit from it in the educational process of the child

**▪ Importance of research:**

1. Activating the role of interactive interior design using hologram technology in preparing the internal environment for the child to develop and develop his various skills.
2. Shedding light on the impact of hologram technology on developing the child's cognitive and cognitive skills.

**▪ Research hypotheses:**

1. There is a strong relationship between interactive interior design and building the child's personality
2. The use of hologram technology in the child's internal design helps in providing an entertaining educational environment for the child.

**▪ Research methodology:**

1. The inductive approach: through books, references and scientific messages that clarify the requirements of the child's environment to develop his cognitive and cognitive skills, and learn about hologram technology and how to apply it within the child's internal space.
2. The analytical descriptive approach: through an analysis of some interactive interior design work using hologram technology inside the child's spaces

**▪ Introduction:**

Childhood is considered one of the most important stages in a person's life. Many studies have proven the importance of the environment surrounding the child in forming his personality, thought, and perception of the surrounding world, as it affects all aspects of his growth: physical, psychological, behavioral, perceptual, cognitive and creative."

Among those experiences acquired by the child are to get acquainted with the types of modern technology and to keep pace with the development of the world around him. Despite the multiplicity and difference of opinions about the role of technology and its impact on the personality of the child, digital technology and electronic games have become an essential and effective role in the child's life in particular that cannot be ignored or dispensed with.

Therefore, recent educational trends have emerged that emphasize the role of modern technologies in the educational process of the child and how to use them in developing his intellectual and innovative capabilities through the development of his perception, thinking and imagination skills.

From here comes the role of the interior designer in trying to benefit from this technological development in developing the educational thought of the child and developing his innovative and intellectual capabilities by designing interactive internal spaces that raise the competence and development of the child

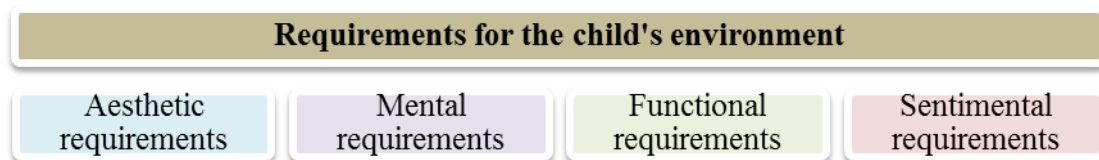
### 1. The child's relationship with the surrounding environment:

There is a very strong relationship between the child and the surrounding environment, The impact of the environment on the child is divided into two main parts:

The impact of the environment on the child	
Direct impact	Indirect impact
It affects the child's general mood, behavior, performance, and perception of what is around him	Affects the formation of basic meanings and concepts in the child, which in turn affect behavior and social attitudes.

▪ **Environmental requirements of the child in late childhood:**

Recent trends and studies related to the child indicate the importance of satisfying the needs and requirements of the child in the different stages of childhood, as it seeks to achieve the proper growth of children in adulthood. These requirements or the needs of the child can be divided into:



### 2. Mental and cognitive development of the child:

**Mental growth** is represented in increasing flexibility in thinking, increasing understanding of relationships between things, and increasing the ability to classify. Thinking develops to reach thinking about abstract subjects, and it becomes more able to use symbolic imagination of things, **As for cognitive development:** it is the growth associated with the mental development and the growth of thinking in the child, as the child's acquisition of many mental cognitive experiences and achievement skills affects the speed of his mental and cognitive development.

### 3. The child's perception of the vacuum (perception stereochemistry of the child):

In childhood, the child is exposed to the perception of the space surrounding him and the extent of his psychological, mental and social influence on him, which appears on his behavior clearly within the boundaries of this emptiness, and through the child's cognitive development he can develop his concepts of the spatial vocabulary surrounding him from simplicity to complexity and from abstraction to composition and so on. from these concepts:

- A. The surface concept of space:
- B. The anthropomorphic concept of space:
- C. The Geometric Concept of Space:

### 4. Modern technology in the spaces of the child:

One of the most important technological techniques that appeared recently in the field of interior design is the interactive interior design and the use of interactive technologies inside the spaces of the child.

**A. Interactive Design :**The interactive technology appeared in an innovative and fun new way to be an attraction to the user in general and to the child in particular, as it is considered a tool that connects the reality in which the user lives and the land of imagination.

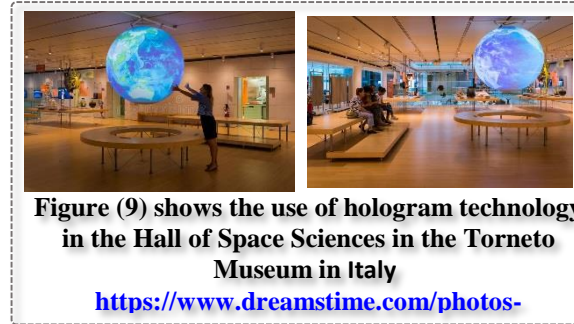


Figure (9) shows the use of hologram technology in the Hall of Space Sciences in the Torneto Museum in Italy

<https://www.dreamstime.com/photos->

**B. The effect of using interactive design on the child:**Many interactive techniques

directed at the child are concerned with educational support for the child in an attempt to solve the problems of traditional "indoctrination" education.

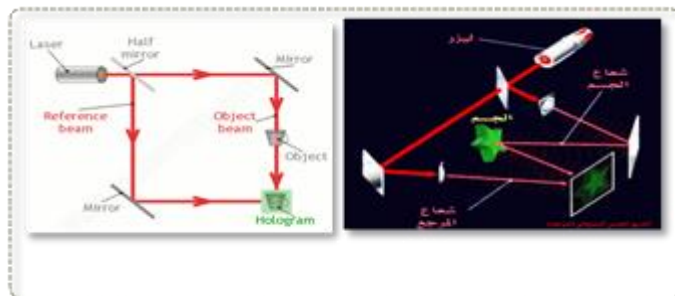
### 5.Hologram technology:

▪ **Defining the hologram technology as:**

Presenting a visual presentation based on stereoscopic imaging within an interactive environment prepared for that. It works on reconstructing a high-quality three-dimensional image that simulates reality using lasers "light rays" and electronic digital imaging

▪ **Components of the internal environment of hologram technology:**

In order to get an internal space that contains elements designed with hologram technology, we need:



▪ **Types of holograms:** There are two types of hologram technology, They are:

▪ **The effect of hologram technology on the child's cognitive development:**

1. Embodying the concepts and information by displaying them closer to reality, which helps the child to quickly understand and perceive the information
2. Stir up curiosity and suspense in the child and encourage him to deal with it as soon as possible to find out everything that is going on in his mind
3. Provide the opportunity for the child to experiment and discover all possible solutions through the mutual interaction between them



## 6. Examples of "hologram technology" in the interior design work directed at children:

There are many interactive interior design works for children using hologram technology, some of which are for an educational purpose, some are for play and fun, and some are for an aesthetic purpose, and we can mention the following:

### 1. The Science Museum of Trento (MUSE):

The Toronto Museum is located in the south of the historic Palazzo delle Albere, Italy, and was designed by Italian architect Renzo Piano. .

Figure (10) illustrates the use of elephants in shows inside the German Circus using hologram technology



the building has six levels (two underground and four above ground) all floors. It was updated in 2013 to use interactive technology and hologram technology in many of its fields.

### 2. German Circus:

The German circus relied on the use of holograms using hologram technology instead of using live animals for the purpose of obtaining a unique, magical experience.

### 3. Mind Blowing 7D Show at Dubai Mall :

The latest entertainment shows were set up inside the Dubai Mall using the highest technology from the hologram "7D" to be a turning point in the world of entertainment within the Arab world, by presenting shows of different animals within the environment in which they live with hologram technology, which makes the child or visitor recognize through the visual and sensory effects. On those animals



Figure (12-13) shows the entertainment offers that the Dubai Mall offers through hologram technology <http://upriser.com/posts/mindblo>

### ▪ Results:

1. The interactive interior design plays an important role in the child's life and the formation of his personality, as it clearly affects his thinking and perception of the space around him.
2. The hologram technology is one of the best methods that affect the development of a child's skills and mental and mental abilities.
3. Interactive design using hologram technology is considered a new pattern that contributes to changing the traditional thought to teach the child and develop his skills.

### ▪ Recommendations:

1. Paying attention to developing the child's internal spaces and trying to take advantage of hologram technology to develop his skills.
2. When designing internal spaces directed at the child, the interior designer should take into account the use of interactive technology, especially in the educational field

▪ **References:**

1. Prof.Dr.Talal Nazem Al-Zuhairy - “Applications of Hologram Technology and Its Investment in the Field of Libraries” Published Research - Al-Mustansiriya University - Baghdad - Iraq-2014
2. Maeng S., Kim D., Lee S. and Lee K., Identifying Product Opportunity Based on Interactivity. HCI International, Springer Berlin Heidelberg, 2011
3. Proshanky,H.M&Ittleson- “ Enviromental psychology: Man and his physical setting “- Rineheart &Winston – New York .
4. <http://upriser.com/posts/mindblowing-7d-show-at-dubai-mall>
5. <https://mindfuldesignconsulting.com/interactive-touchscreen-commercial-interior-design-application/>