

Some modern technological trends of interior design and furniture in educational buildings for integration schools

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Abstract:

The research presents a brief overview of some modern technological trends for interior design and furniture in educational buildings for integration schools, and its impact on the interior design in integration schools. The method of inclusion is intended to provide all services for people with special needs in an environment far from isolation, which is the environment of the regular classroom in the regular school, and for inclusion there are scientific and educational rules and conditions that must be available before, during and after its application, as well as realizing the impact of technology on the interior design in inclusion schools and its impact on its function and creating an interactive environment that integrates the mental and motor activity of the user, as integration schools in Egypt lack the elements of interior design to achieve modern technological trends, therefore, foundations and standards for interior design must be established in the integration schools and a study of; the site, the area, the equipment that it includes (natural and artificial lighting, paints, floors. The interior, including the technological design of educational buildings, and the intelligent design of the integration process in educational buildings.

Opening words:

Integration - students with special needs - technology-enhanced education - smart interior design - interactive interior design.

Research problem: The research problem is determined in the following:

Interior design of children's schools isn't prepared with smart technology nor applying the concept of sustainability, which hinders the integration of children with special needs in those schools.

Search objective:

-Reaching new standards for contemporary interactive interior design to keep pace with modern education systems to integrate people with special needs in educational buildings with healthy students.

- Suggesting flexible design areas within the educational buildings by reconfiguring the multi-functionality in them, allowing people with special needs to easily move and access all facilities.
- Connecting the components of school spaces with smart systems so that they adapt to the changing requirements of individuals and take into account their optimal use.

Research importance:

- Benefiting from the interactive design and modern technological methods in furnishing educational classrooms.
- Emphasis on the design of corridors and movement paths with audio-visual systems and appropriate floor treatments, according to each case.
- Developing interior design and furniture in order to diversify the educational services provided to children with special needs.

Search limits:

Objective limits: the interior design of integration schools using smart technology and the concept of sustainability

Time limits: the current era.

Spatial limits: educational buildings to integrate children with special needs in the Arab Republic of Egypt.

Research Methods:

The analytical descriptive approach, which includes the collection of design and technical specifications for educational buildings to integrate people with special needs.

Then analysis and interpretation of facts and information about the concept of integration within educational buildings, based on the study of interior design standards and the study of modern trends of interior design within educational buildings.

The introduction:

Education is a complex, multifaceted responsibility shared by all the various institutions and systems of society. Education is a right for every member of society, regardless of their abilities or talents. Schools should provide the opportunity for each student, regardless of their abilities, to receive educational opportunities that meet their needs and the needs of the community and that qualifies them to integrate into this society as a good citizen and an effective member. Special education has emerged to meet the needs of a segment of society members, which requires some special arrangements to grow, and to be raised and educated like the rest of the community. With the development of special education and its contents of detection, diagnosis and use of special educational methods, as a result, some schools refuse to teach some students on the grounds that they are unable to learn, although before the advent of special education, these children were receiving their education with their ordinary peers in schools. - Albeit by ineffective methods and without planning it, and after decades of isolation in institutions and private classes, human societies realized that this did not provide the desired solutions for raising and educating these individuals. This led to the emergence of the integration movement, and the interest in the Gulf countries has increased recently in people

with special needs and their services, and there has been a change in the perception of them, whether at the level of decision-makers or at the societal level, and integrating people with special needs with their colleagues in schools is one of the most important advanced steps that various rehabilitation programs view as a primary goal to rehabilitate people with special needs recently, so it is necessary to design integration schools with smart techniques to prepare the functional formation entity which accommodates students with all their senses and requirements, by integrating both the concept of interior design and smart technology.

1- Integration:

1-1- Definition of Integration:

Integration is to provide opportunities for children with special needs to enroll in the special education system as a measure to emphasize the principle of equal opportunities in education. Integration generally aims to meet the special educational needs of children with special needs within the framework of the regular school and according to appropriate educational methods, curricula and means, and supervises their provision as specialized educational apparatus in addition to the teaching staff in the public school. ()

1-2- The objective of the integration:

The main objective of the amalgamation process is to change classification systems of this type and to ensure that all students, especially those with special needs, are capable of education and training if appropriate and effective programs are provided to them. For them as being thought of as they are unable to learn, and this constitutes the biggest obstacle to their education in general and to their inclusion in regular classes in particular () .

2 - Educational technology

1-2- The concept of educational technology and its application in the integration schools:

()

Educational technology is "the theory and application in the design and development of programs for individuals, whether ordinary or people with special needs, to facilitate the teaching and learning process, and to deal with various learning resources to enrich their experiences.

There are several terms defined as "any material, piece, or thing modified or made to order with the aim of "increasing the scientific or functional competence of children in the fusion trends."

-2-2- The role of educational technology in providing solutions for people with special needs: ()

The role of educational technology is to provide solutions for people with special needs through:

-Physical solutions: represented in the provision or acquisition of hardware, materials, aids, educational resources and software.

Intellectual solutions: derived from teaching and learning theories and transforming them into educational competencies to provide an appropriate learning environment for these individuals.

3--2-The requirements of the technological interior design in the educational environment of the integration schools:^(١)

- 1-3-2- Functional requirements for designing furniture and surfaces in educational environments.
- 2-3-2- Aesthetic requirements in educational environments (integration schools).
- 3-3-2- Requirements related to the selection of materials for educational environments (integration schools).
- 4-3-2- New materials and technology.



Figure (1) shows the Light seat - Alberto Meda design, made of Carbon fiber

3- Intelligent interior design inside educational buildings (integration schools):

Smart interior design is the formulation of the interior space through a group of elements that are electronically controlled by a machine that is programmed to carry out the work required of it to adapt and respond, as well as reducing the negative impact on the environment through energy and resource efficiency and improving the internal environment.

1-3 - The importance of smart interior design:

- 1- Improving the quality of the indoor air and the levels of indoor comfort, as well as raising the levels of auditory, visual and thermal comfort.
- 2- Providing more interaction and cooperation, whether physical or electronic.
- 3- Increasing the ability of children with special needs to automatically control the building systems and the internal environment.
- 4- Building management (environmental control of building systems and occupant control).
- 5- Vacuum management (controlling changes by achieving consistency and flexibility).
- 6- Reducing operating costs.
- 7- Removing from independent control and achieving total control over all building elements and systems.

2-3- Elements and components of smart interior design:^(١)

- 1- Smart devices:
- 2- Intelligent systems:

3-3- Applications of smart interior design:

- 1-5-5- Smart Furniture.
- 2-5-5- Movable Partition Walls.
- 3-5-5- Interactive surfaces.
- 4-5-5- Interactive floor.



Figure (2) shows the shape of the movable partition walls



Figure (3) shows the shape of the thermo chromic table as an example of thermo chromic materials
Source: (Watson, 2016)

4- Interactive design: ()

The interactive system is considered among the smart systems that work on developing interior design and furniture inside educational buildings (integration schools) and also works on developing the skills of people with special needs.

1-4- Interactive Interior Design Components: ()

- 1- Interactive surfaces inside the integration schools.
- 2- Interactive interfaces within the integration schools.
- ٣- Interactive floors inside the integration schools.

2-4- Interactive flooring types:¹²⁾

1-Interactive floors with mechanical components.

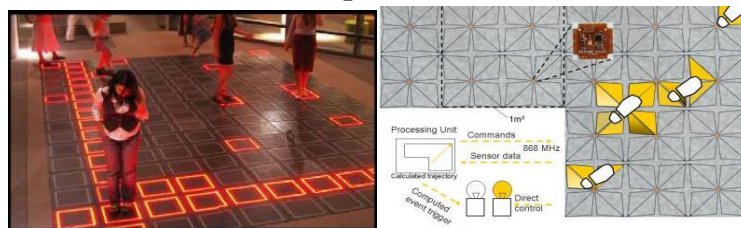


Figure (4) shows interactive floors based on mechanical sensors

2- Interactive floors using piezoelectric materials¹³⁾



Figure (5) Interactive floors consisting of tiles, under which sensors are installed to interact with human movement

3-4- Interactive walls inside the⁴ integration schools: ()

The main objective of designing the interactive walls in the integration schools is the direct communication and interaction between them and the students, especially students with special needs.

- Interactive wall types:

- A- Aegis Hypo surface.
- B- Interactive Projection walls.
- C - Wall touch screen.

4-4- Interactive ceilings within the⁵ integration schools: ()

- Interactive wall types:

- A- Aegis Hypo surface.
- B- Media display.
- C - Wall touch screen.

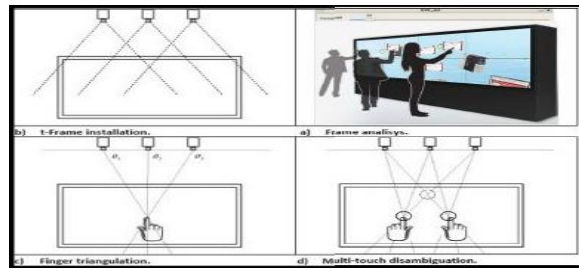


Figure (6) shows the shapes of the interactive walls with the T - Frame. System⁶⁾

(٨) يوضح أشكال الحوائط التفاعلية بنظام التي تعمل باللمس^{١٧)}

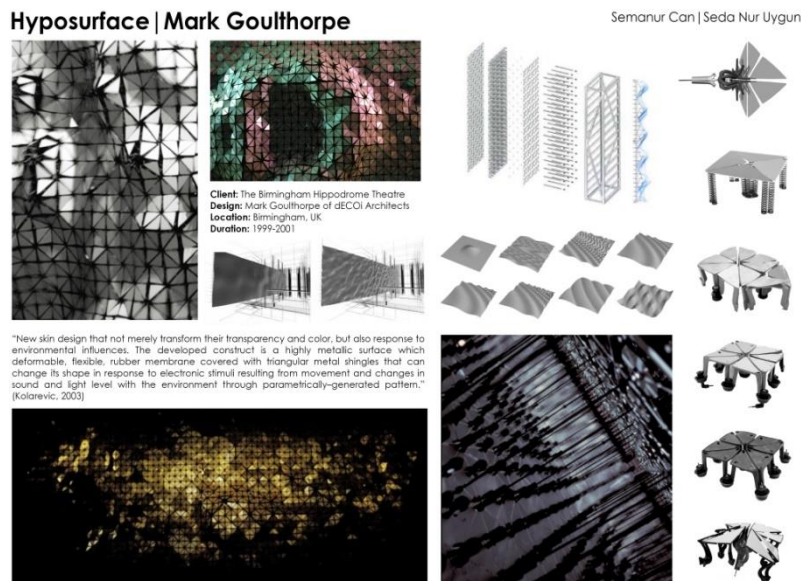


Figure (7) shows different models for the use of interactive ceilings with mechanical components⁸⁾

-5-4- Interactive furniture inside the⁹ integration schools : ()

Types of interactive furniture:

- A- Interactive Sensing Chair.
- B- Smart Desk.
- C - Wall touch screen.

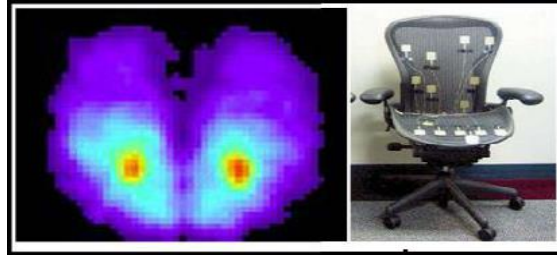


Figure (8) shows the interactive chairs based on the pressure maps inside the computer²⁰



²⁰Figure (9) shows the smart office

Results : -

Through the study, several results appear to us that can be summarized as follows: -

1- The educational space should be able to motivate students, especially those with special needs.

2- The interactive interior design helps in updating and beautifying the shape of the spaces inside the integration schools. It also helps students, especially those with special needs, to learn quickly and have a more absorbing capacity because of the factors that dazzle when using.

3- The good design of the integration schools depends on the study of the requirements of the technological interior design in the educational environment of the integration schools, which must be well known before applying modern technologies to the design.

4- The use of smart materials in the interior design of the integration schools gives flexibility and ease in moving pieces of furniture within the space. Furniture pieces can also be used in more than one function.

5- It is preferable to use mobile partition walls, through which spaces can be separated and merged. The necessity, as well as the possibility of making openings for doors and windows.

5- Interactive walls are a special type of computer application on internal and external architectural walls. The main objective of designing interactive walls in integration schools is direct communication and interaction between them and students, especially students with special needs.

Recommendations: -

1- The necessity for the Ministry of Education to pay attention to the method of inclusion in educational buildings and to adopt it mainly and to provide all services and care for people with special needs.

2- The need for the Ministry of Education to pay attention to the application of smart technology within the integration schools, as it creates a healthy and interactive socially and intellectual environment among the students. It also provides a safe, comfortable and flexible

environment for people with special needs and provides them with financial support and the necessary expertise.

3- Faculty members must be familiar with the requirements of technological interior design in the educational environment for people with special needs and determine their needs and requirements.

4- Interior designers must fulfill the conditions of interactive interior design to achieve an interactive environment between ordinary students and people with special needs and reach new dimensions in the relationship between them.

5- The need for interior designers to pay attention to providing smart, highly efficient, changeable and adaptable furniture that saves spaces within the void. All horizontal surfaces such as tables and shelves can be converted into vertical surfaces hidden in walls and floors.

6- Designers should include interactive walls in the integration schools because they work on communication and direct interaction between them and students, especially students with special needs.

7- Designers should use interactive floors in the integration schools for children, as it is a fun interactive experience and an effective interactive participation between children.

8- The interactive ceiling technology should be shared with the interactive floors in the integration schools for children as one of the means of light display technology that provides an enjoyable interactive experience and an effective interactive participation among children.

9- The constructors should move towards constructing smart buildings, which have a role in achieving the best solutions for the surrounding environment.

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