



The Responsive Interior Design and its role in designing the interior environment for handicapped people

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Introduction

There are principles and elements of Interior Design that the designer should study to create an internal environment for the user. Interior design always need the newest and latest concepts and technologies to provide advanced solutions for many of design problems.

At the beginning of the twenty-first century , the term " Responsive Design " appeared within the framework of taking advantage of the advanced technologies and comprehensive systems in order to support the idea of supporting the responding to the user needs .

Because of the handicapped people rehabilitation is like a cultural challenge because they are not getting enough services and care . They should involved in the community, live their lives and participate their activities with respect and appreciation.

Here comes to our minds a traditional question: How can that be a real? In this study, we also add others questions: Does Interior Design has a role to achieve this aim ? Can twenty-first techniques (that already applied in the internal design spaces) create a new ideas to make handicapped people lives more easily?

In this study, we will try to answer those questions through some objectives that are: Studying Responsive design concepts (as an interior design applications that use the latest technology) , Studying opportunities are provided to support handicapped people, through design a suitable internal space that will help them to communicate effectively with the community. In the end, this study will present a design for handicapped people's classroom with Responsive design application.

Keywords

Responsive Architecture - Responsive design - handicapped people.

Statement problem

Explain and locate the role of Responsive interior design in providing an internal space for handicapped people- people with special needs- where they can meet their needs easily .

Research importance

The importance of search due to the studying and applying design systems which can help handicapped people- people with special needs - to acquire them skills and coexistence , also to communicate with the community effectively.

Objective

Create new design methods through the Responsive design concepts application in interior design, to help handicapped people (different abilities and aptitudes) to learn better.



١١ What is Response?

Some studies have touched the definition of the response as medical Mondofacto Dictionary which is: [To say something in return, make an answer, to show some reaction to a force or stimulus, to render satisfaction.]

١٢ Multi responses

Humans senses are equivalent in their basic properties. The researchers note that the meaning of perception that can be included intuition, or immediate perception of the information that be acquired from the environment, through one or more of the senses.

١٣ Architecture for the Senses

"Architecture is the art of reconciliation between ourselves and the world, and this mediation takes place through the senses."

Architecture often focuses solely on the visual aesthetics of the project and never engages the user on a deeper level than the first layer of visual memory. If architecture is to have a permanent place in a person's physical setting it has to strive to engage the person on multiple levels of the consciousness. Architecture that deliberately engages multiple senses not only creates conscious connections to a space but also creates subconscious connections to the space. These subconscious connections enhance the existential experience of a space and are also ingrained deeper within a person's memory of place.

١٤ Sensory Design

Sensory design is a way of design that produce designs which raises the human mind and his senses through audio factors, visual factors and touching . Sensory design blends the human emotional aspects of advanced technology. It refers to the method or style of technology design that express of human desired values in a comprehensive manner and based on the principles during the design process, which mainly is focused on human comfort.

§ Responed Touching Design

While the tactile space separates the observer from the objects, the visual space separates the objects from each other , the perceptual world is guided by the touch, being more immediate and welcoming than the than the world guided by sight.

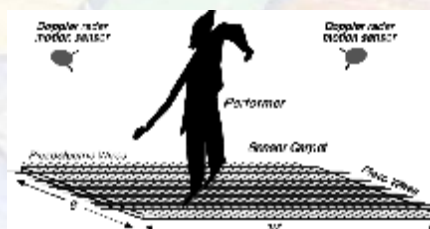


Fig. 1 : Senate Carpet that used a Piezoelectric Wires in it, to measure the foot location.



Fig. 2 : Waterboard as a design responed by touching.



§ Responded hearing Design

Sound is invisible but has the power to change the space characteristics we occupy, the buildings always has sound. They can sound unemotional too.



Fig. 3 : Walking wall as a responded design by touching.

§ Responded Emotionally design



Fig. 4 : Emotionally scarf as a Responded design by Emotion , which used battery and IR Infrared Sensors. That be active when the scarf approached of another whose has the same characteristics, so both of scarves recognize each other and some parts of it changes color to be red, which indicates the proximity between both of them.

□ Interior Environment Perception

Sensory perception helps users to accommodate the design and its formations. We can realized the interior environment in a balanced manner of the eye, ear, nose, skin, tongue, skeletal and muscle, rather than just looking at the space. No doubt that ignorance of sensory ranges effects of interior design at contemporary architecture, leads user to lose design elements sensing.

So the designer must used the sensory information in spaces interior design, which has multi-sensory signals clearly and characterized by mental image

The internal environment be realized through three stages of human behavior which are: Perception, Cognition, and Spatial Behavior.

□ Substantiate research hypothesis:

The search is supposed that Sensory Design application in internal environments which are used by people with special needs, achieves their functional requirements and contribute to providing to them a suitable and comfortable environment, helping them to integrate with society and acquired skills with more interesting and successful manner.

The latter part of the Search discusses and analyzes a design proposal to cultural educational entertainment centers for children, where the design is proposed to apply Sensory Design in the internal space, in order to achieve the objectives of the search, by creating and providing an educational social environment, which helps children with special needs on education with non-disabled peers, and that achieved through the provision of a modified environment, increase social interaction and mutual acceptance between them.



§ **There are Some important conditions to achieve a successful educational technologies for people with special needs: -**

- Attracting the children's attention and encourage their motivation .
- Be easy, simple and clear in the information presentation with no complexity.
- Be flexibility in using and has portability of amendment and development.
- Should be appropriate for cognitive, linguistic, emotional and physical level for children.
- Be relevant to the category who be educated.

§ **The general objectives that the proposal project aims to achieve:**

- Special needs children's respond with the space by using sensitive wall, which create cheerfulness in their hearts, that decrease their tension and anxiety, and it is consider as positive sign to modify their behavior.



Fig. 5 : Responder design uses touch sense walls to feel the user movement when he touched it.

- Children be Integrated and communicate with their community through participation in social activities, and develop their skills by using responder design that reduce dependence on others.



Fig. 6 : Magic table.

- The using of responded design leads children with special needs to configure a correct thoughts. For example, when interactive wall it displays a pictures and models for different types of fish, that make him gets a facts about the kinds of fish .



Fig. 7 : Liquid Crystal Display

- **The proposed experiments design through the research results application :-**



1 . The hall's space designed as – there are numbers of chairs and tables , also there is a supervisor office to controlled and exit to the garden.

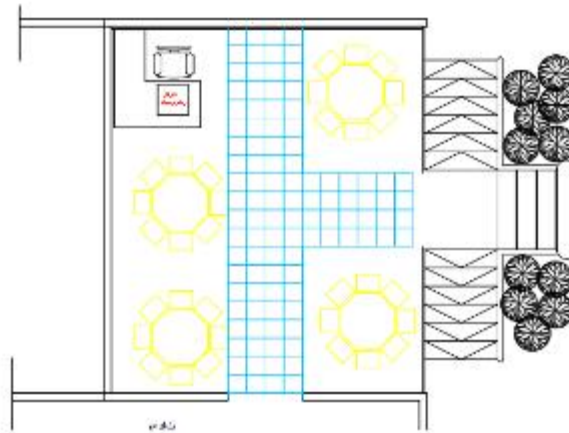


Fig. 8 : Circulations , entrance and exit to the garden.

2 . Doors - automatic slip on a wheels on a track above the door slot,. The door closes automatically where they are activated by motion sensor devices for more security and safety.

3 . Furniture:

- The hall has a supervisor office of with a touch screen to control the equipment in the operating room.
- The hall has chairs are designed to be converged, under the ground surface level.



Fig. 9 : The stages of converging the chair in the hall under ground surface.



Fig. 10 : The stages of converging the chair in the hall under ground surface.

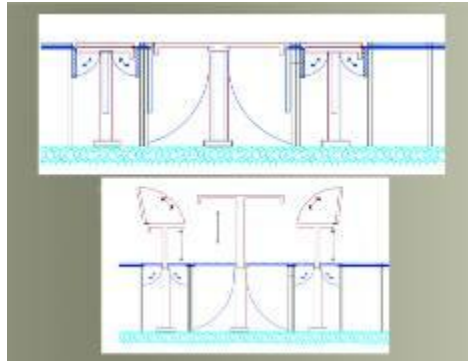


Fig. 11 :Technological details shows how to convergence the chair under the ground surface .



Fig. 12 : How the chairs are looking..

The hall's Chairs divided to four groups based on the users type of the hall :-

- **First group** : the red chairs which are for normal children users, that red color gives energetic and activity to the children . Fig. (13-a)
- **Second group** : the white chairs which are for autistic children users, where they affected by strong colors, so project suggested white colors because its a neutral colors. Fig (13-b)
- **Third group** : chairs with red color are divided into two groups (the first is convergence , and the second group is be opened), so it allows to the moving seats of disabilities children use the hall , that achieved integration between the two groups. Fig. (13-c)
- **Fourth group** : all the chairs are folded to allow children's with disabilities moving seats access to the hall. Fir. (13-d)

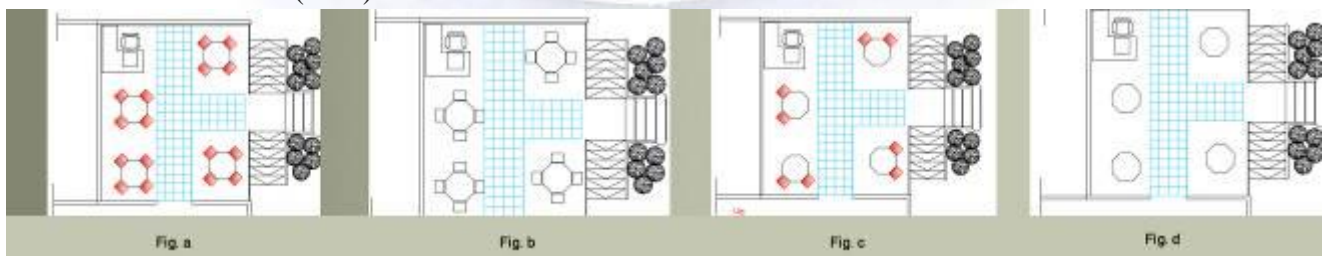


Fig. 13 :The four groups of chairs based on the users type.



Fig. 14 :How the chairs are designed based on the users type.

4 . Roof : is equipped with four projectors, each of them directed to wall and are controlled through a screen in supervisor's office.

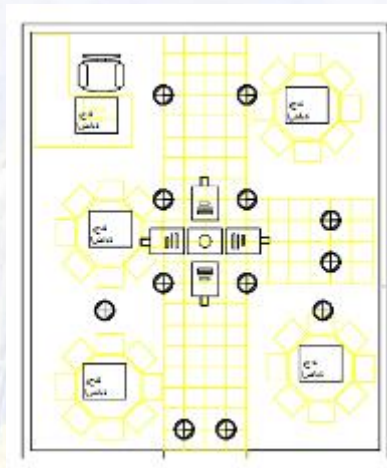


Fig. 15 : The four projectors, and lighting units .

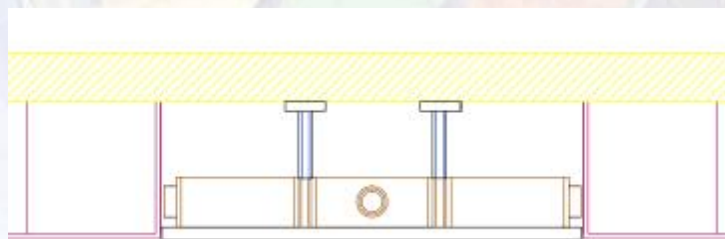


Fig. 16 : How to install projectors devices, and the way of converged it inside the ceiling.

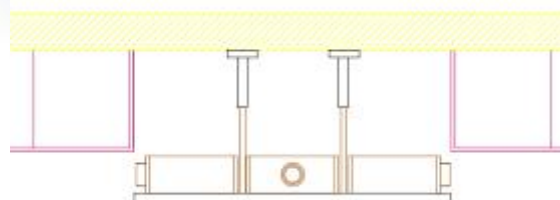


Fig. 17 : The way out of the ceiling projectors.



Fig. 18 : The ceiling projectors.

Results

1. The application of different systems design innovative in the field of interior design works to help people with special needs acquire skills and communication with the community more effective ways.
2. We conclude that the use of responsive design for the of indoor environments design using by people with special needs considered one of the best solutions that will help them integrate into the community , as well as they exquisite of skills and knowledge, like normale people.

Recommendation

The improving the quality of indoor environments with different spaces that using by special needs diverse activities are considered special case design requires a number of serious studies, and the study of the quality of disability on the unit with a focus on human and social dimension.

The purpose is not only creating and providing appropriate educational and learning environment, but the goal is to help children with special needs on education with their normal children , to increase the social interaction and mutual acceptance between them.

We must use innovative methods such as responsive technology in order to achieve requirements to an internal environment that supports the needs and requirements of people with special needs.

The researchers recommend following the design stages proposed of responsive design for internal environment to achieve the merger between normal children and children with special needs (whatever the type of disability) physical or psychological.

Reference

١. امانى احمد مشهور - دكتور - التأثير الأيجابي للتصميم الداخلي في الحفاظ على الصحة النفسية للإنسان - دكتوراه - كلية الفنون التطبيقية - جامعة حلوان - ٢٠١١ - ص ٢٨
٢. سناء ساطع عباس ، شمائل محمد وجيه - دور العمارة متعددة الإستجابات الحسية في تكوين الصور الذهنية المميزة في الفضاءات الداخلية - القسم المعماري - الجامعة التكنولوجية.
٣. عبد النبي ابو المجد - دكتور - الأرجونوميكس الحديث : خطوط إرشادية للعمال الإنسانية في التصميم [الإستعمالية - الامان - الراحة] - الناشر المؤلف - ٢٠١١ - ص ١١٢ : ١١٤
٤. محمد السعيد عبد الجواد - التربية الجنسية للأطفال والمراهقين ذوي الإحتياجات الخاصة - كلية التربية - جامعة الإسكندرية - ٢٠٠٤ .
5. Magda Moustafa - The Autism ASPECTSS™ Design Index - Structural and Architectural Engineering Department - A.U.C - 2002.
6. MERLEAU-PONTY, Maurice- Architecture, Senses, Body and Perception Phenomenology and Perception, 2006
7. <https://ar.wikipedia.org/wiki/>
8. www.ar.wamda.com
9. <http://blindeg.com/vb/archive/index.php/t-12605.html>
10. www.en.wikipedia.org/wiki/user-experience_design
11. www.hasen.org.uk



12. www.mondofacto.com/dictionary
13. www.talk2myshirt.com

