Toy Furniture Design

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Abstract:
Furniture was not limited to carrying out its basic functions of observing the standards of the human body or providing comfort to the user and taking into account the aesthetic aspects such as colors or the effects of materials used and other requirements that are based on the design. And in the midst of these developments of manufacture furniture there are other types of enjoyment appeared in the functions of furniture provided such as a toy or measurement of behavior or that helps children reduce excessive obesity also there are pieces of furniture provided with smart screens connected via the Internet and through it access to data and Infinite games and the matter did not stop at that, but it was possible to use the electronic dynamic three-dimensional screens and by using movies prepared for the three-dimensional holograms that float on or above the screen using a hologram and can thus be installed on the furniture pieces in order to achieve pleasure and enjoyment in the resting places or waiting area. Also toy furniture can be made by Recycling industry which has a dual relationship with the environment in the extent of efficiency in the use of resources and the resulting which effects on the environment so we can access competitive, which means the progress of the economic and the research will focus on the furniture design as toys and explain the different types of them and how does it affect on users also uses of Recycling industry for making toy furniture. The problem lies in Lack of information on the foundations, principles and classifying of designing toy furniture and the extent to which it can be used in education, health and other sciences, The shortage of knowledge about the physical and psychological impact of entertainment in game furniture design, How to benefit from environmental recycling material in making toy furniture designs. The research aims to Study and explain the general concept of toy furniture design and factors affecting on it and studies some selecting item of toy furniture design, Clarify The impact of the entertainments in the toy furniture design, Study of environmentally friendly recycled materials according to the design of game furniture.

Introduction:
Recently, the use of Furniture design has not been only limited to carrying out its basic functions of observing the standards of the human body to provide comfort to the user (19), taking into account the aesthetic aspects such as colors or the texture of the materials used in the design, implementation, manufacturing and other design elements, but in the midst of amazing technological developments and based on the conditions for developing a design based on foundations, standards, and methodologies that could help solve problems, create something new, or transform situations in preference to a better position. many jobs have begun to appear that could be added to furniture design and its applications such as toy furniture design that provides more luxury as well as fun and entertainment, whose effect appeared in other fields such as education and behavior measurement and in some health aspects such as treating depression and other aspects in which entertainment is an influential factor, It was physical or psychological effects toy furniture design is based on two basic styles in the design, the first type depends on the change in the distribution and shape of the piece of furniture through various materials and colors and the second styles depends on adding digital technological devices which display two dimensional data or games that can be accessed without limits by using smart screens or three dimensional presentations connected via Internet through Using hologram technology, Also the design and manufacturing of toy furniture has been possible through recycling industries, which have a double relationship with the environment in the extent of efficiency in the use of resources and the
resulting effects, both on the environment and the economy. The research will address toy furniture design by studying and explaining the general concept of design and the factors affecting it, and clarifying the effect of entertainment means in designing game furniture and the possibility of manufacturing it from environmentally friendly recycled materials.

Research Problem:
The problem lies in
- Lack of information on the foundations, principles and classifying of designing toy furniture and the extent to which it can be used in education, health and other sciences
- The shortage of knowledge about the physical and psychological impact of entertainment in game furniture design
- How to benefit from environmental recycling material in making toy furniture designs

Objectives:
The research aims to
- Study and explain the general concept of toy furniture design and factors affecting on it and studies some selecting item of toy furniture design
- Clarify The impact of the entertainments in the toy furniture design
- Study of environmentally friendly recycled materials according to the design of game furniture.

Methodology:
The study uses an analytical descriptive methodology followed by an application by designing some pieces of furniture following the toy furniture design principles

Toy furniture designs
1-1 Toy furniture design concept
Play is a mental or physical activity that an individual undertakes, whether this individual is young or old, in order to meet his different needs, which he can achieve through play, such as entertainment, discharging excess energy and education (3) which can be applied in the designing furniture pieces called toy furniture
So the concept of toy furniture design is to design a pieces of furniture according to the foundations and principles of designing furniture, provided with the using of playing approaches whether with using elements or materials or fixed parts connected to digital technology (are added to display a two or three-dimensional presentations) to give the characteristic of playing in order to provide luxury, comfort and entertainment whenever possible. Also it can be eco friendly designs by using environmental rotatable materials or recycled items
This type of furniture design and pleasure based approaches may be related to other sciences such as
- Education and understanding of behavior
- Health (through the physical and psychological effects that may occur to the user, especially with depressive diseases resulting from great stress, which are the most prevalent diseases of the age)
- Sciences of mechanics, electricity or technology especially recreational computing and other sciences complementary with the concept of entertainment and furniture manufacturing
So toy furniture designs will deal with a number of new challenges that must be addressed in order to support such approaches perhaps the three major challenges are as follows
- Understanding people holistically
- Linking product benefits to product properties
- Developing methods and metrics for assessing product pleasurability (8)

1-2 The toy furniture design categorizing
- toy furniture design with traditional configuration and materials
- toy furniture design using digital technology and equipped with technology to display two-dimensional content
- toy furniture design equipped with technology to display 3D content such as a hologram

1-3 Toy furniture design depend on forming
1-3-1 Models for Toy like furniture
The first thing that jumps to mind when talking about toy furniture design is the mini
children toys that consist of various pieces of colorful furniture (23) that attract children and are implemented in the same sizes of the original pieces.

While some of them are used with different drawing scales to make the mini architectural models for different projects (35).

1-3-2 Toy furniture design in home
People's perception of their environment influences their social interaction within that environment (20) so designer seeks first and foremost, to satisfy consumer and fulfill most of his needs while taking into account the technical ways in manufacturing (4).

so one of the toy furniture design's style is to make designs inspired can be inspired from any famous thing like the famous Disney movie which called “Cars” Where is designer made the bed like the shape of the cartoon character (24) which enhance interacting children with things.

Artists have developed toy furniture elements and invested these elements as decorative units or vocabulary for their formations in decorative designs in a contemporary (17) till toy furniture became a part of living. It gives the family time for entertainment it was made as traditional toy then the smart furniture replaced it.

1-3-3 Toy furniture design in Public area
Definition of an individual's interaction levels is one mechanism used in achieving a desired level of privacy. Besides needing enough space to move about and perform various tasks (14) and that what happened in the Pebble-like seats in pastel hues offer students a place to recline in this recreational area, which Igarashi Design Studio has created for an arts university in Tokyo (27).
Toy furniture design by reshaping form

Toy furniture can be reshaping in many designs using the furniture piece parts which can be from the same material and color or can be multi color also can extend to make different forms.

Toy furniture can be designed in public area like that bench’s base which was made up of three colorful stools that resemble children's building blocks an orange square cuboids, a blue cylinder and a pink cuboids with a curved side (29) and manufacturing the patterns evolve from time to time as a result of their subordination to economic or industrial factors (2).

Toy Furniture Design Studio's Zero Space is filled with furniture based on river-weathered pebbles among the playful features architecture (28) because art is not a mimicking of nature according to the saying attributed to Plato, but rather a revelation or expression of absolute thought in a sensual forms (10).

Also there is a school designed to suit the Montessori approach to teaching, a method that focuses on educating children through play and interacting with their environment where the curvaceous wooden reading dens and lily-pad-like cushions for jumping on are because art is not a mimicking of nature according to the saying attributed to Plato, but rather a revelation or expression of absolute thought in a sensual forms (10).
2 The impact of the entertainments in the toy furniture design

2-1 Entertainment computing (Digital entertainment gaming)
Entertainment computing is a new area to get together various types of interdisciplinary research which have been created by (IFIP) (38) it is a discipline whose aim is to combine technology with other areas such as art, culture, etc. with using of the Artificial intelligence which is consider as a fundamental enabling technology for improving the playing experience in several types of games and the core of Entertainment computing is the entertainment Games, Digital games and Digital arts (6)

2-2 Edutainment and infotainment “gamification”
This is in contrast to education (which is designed with the purpose of developing understanding or helping people to learn) and marketing (which aims to encourage people to purchase commercial products). However, the distinctions become blurred when education seeks to be more "entertaining" and entertainment or marketing seek to be more "educational". Such mixtures are often known by the neologisms "edutainment (39)" or "infotainment". Some education-entertainment is a serious attempt to combine the best features of the two and the combination of edutainment and entertainment technologies – sometimes called “gamification” – offers new possibilities to educators and learners.
And we can apply that on the toy furniture designs which became also a part from public places waiting areas or in restaurant or café and many other places which focus on giving entertainment to client.

2-3 Exploratory Behavior and learn
also (STEM) it is a serious games are one of the most promising areas in bridging the gap between enjoy full play and professional use through “gamification” which include regarding science, technology, engineering, and mathematics (13)

Motives are those driving forces within people that drive them to behave in a specific direction as a result of their exposure to different environmental products. Where Motivation is a biological psychological force within the individual that urges him to undertake a specific activity to satisfy a specific desire, and this force continues to
push the individual and direct his behavior until his desire is satisfied (1) as Tawfiq al-Hakim says that the art serves society without losing an atom of its higher artistic value the aesthetic value is the ability of a thing or its strength to cause a certain type of aesthetic response which capable to response an express behavior

Art as Tawfiq al-Hakim says is the art that serves society without losing an atom of its higher artistic value the aesthetic value is the ability of a thing or its strength to cause a certain type of aesthetic response in scenes capable of this response (22) which happen to express behavior

2-4 Chairs designed for the peculiar behaviors

like the chairs designed to focus on the subtleties of body language and gesture rather than big movements and bright colors to show to that they are meant to be a playful and explorative extension of simple human behaviors (30)

the chair which features a large outer circle and two smaller rings This shape came from an observation that the seated body often requires a good, deliberate stretching. second chair which has arms that extend vertically outwards to allow the user to occupy space beyond the seat itself, third one is designed to rock forwards to help the user stand up from a work desk when the weight of the body is already leaning forwards .yellow chair has Pedals are tucked under to allow a user to bounce their heels up and down if their legs feel restless

The weight of the body often appears to the left right or back when People sit or rest while they interact with others In order to make this restless movement more comfortable, Hu designed a light green chair with a curving, padded back rest that allows the user to lean their back against the chair at any angle

2-5 Desk designed for specific behaviors

In a study for students behavior while learning they found students with standing desks are more attentive than their seated counterparts it means to reduce childhood obesity and relieve stress on spinal structures that may occur with traditional desks (36)

2-6 folding unit designed for specific behaviors

This toys help fine motor skills with learning their own facial expressions and encourage Imagination stimulate creativity for children in daycare or at home with shatter-resistant mirrors
Easy to Transport folding design with a velcro closure to easily move from one spot to another (25) Triangular design provides a stable base for pull-up and walk-around first steppers and features rounded corners and edges for safety

Stationary unit allows plenty of roomy storage on one side and a full-length, extra-safe, acrylic mirror on the other. Top ledge helps keep toys off the floor (40) and the triangular design provides a stable base for pull-up and walk-around first steppers rounded corners and edges for safety (26)

2-7 The psychological and physical impact

Entertainment can be seen as a public health issue because People who have been allowed and encouraged to play stand the best chance of becoming healthy, happy and productive members of society (7) and it is also used as a cognitive intervention and some positive aspects of playing can promote literacy, thinking, reflecting and creativity especially for kids (5)

Among the demonstrated skills and benefits of games are as follows

- Hand-eye coordination and reaction time and Task switching
- Games require the use of logic, memory, problem solving and critical thinking skills, visualization and discovery and according to “Goldstein more than 40 studies concludes that play enhances early development by at least 33% (18)
- Gaming in 2D or 3D applications contributes to positive cognitive effect have been consistently observed in visual-spatial skills and Spatial visualization
- Visual attention, search strategies perception and the use of visual information

Also gaming can be beneficial for brain development and functioning in which the positive effects of gaming may also prove relevant in therapeutic interventions targeting psychiatric disorders; particularly depression because Entertainment is relieves stress and one of the best treatments and distractions to get over it. Especially when getting quality entertainment mind thinks of other things, and releases endorphins, hormones that are responsible for feeling good. This is a better way to deal with stress, as it gives some time off to relax and prepare mind for recovery (37) and the effect of this is more effective if these games are part of the furniture that we deal with like toy furniture designs

2-8 The economical impact of the entertainment in designing toy furniture

Entertainment products have not only a technical and economical impact but also an enormous societal impact as Johan Huizinga
showed in his book Homo Ludens that playing is the basis of our culture also the psychologist Mihaly Csikszentmihalyi indicated in his “Flow Theory,” that the entertainment market is huge like interactive TVs, movies, smart toys… etc (21) and it affects on the economic aspects and attract huge investments to finance it, whether in its manufacture or presenting it to society, which had a great impact on the economic return and the revitalization of digital technology fields, and also in the manufacture of different types of games, including create a new type of furniture design which is toy furniture design

3 Toy furniture designs depend on Recycling

Recycling industry has a dual relationship with the environment in the extent of efficiency in the use of resources and the resulting effects on the environment so we can access sustainability (16) which impact on the encompass life cycle in both of the progress economic (9) and environmental aspect

Recycling industry has a dual relationship with the environment in the extent of efficiency in the use of resources and the resulting effects on the environment so we can access sustainability which impact on encompass life cycle in both of the progress economic and environmental aspect and that became clear special in 2016 child-focused furniture and toys dominated Milan Design Week when Kartell president and CEO Claudio Luti told Dezeen: "It is a huge market with very high potential Since then, numerous design products aimed at children have launched with the general design principle is give benefit element and beauty as basic condition that must be fulfilled

3-1 Reshaping toys for making Toy furniture

So you can save time and money on maintenance and replacement costs as well as helping the environment Recycling plastic into useful products one day is the future (33) and with an overarching goal of introducing children to the circular economy Antwerp based brand Ecobirdy has used recycled plastic toys to create a range colorful furniture for kids, aiming to raise their "awareness for sustainability" all the pieces are made from old plastic toys and are completely recyclable (11)
3-2 Recycled material to make Toy furniture

though Recycled material has arrived already with kitchen play units with handles and wheels to make them easy to move also the brightly colored, recycled plastic is very attractive will not fade in the sun as the plastic is UV protected and do not rot of course On top of that, they are eco-friendly in every way

so can be left outside in all weather throughout the year, though you can use them indoors too From a purely financial perspective these units are very good value for money, as they will not bring the recurring costs of maintenance, repair and even replacement associated with the wooden versions of this play equipment (34) so that way of production will be a competitive advantage for whom will use it for sustainable development bearing in mind that sustainable design works through three strategies, which are to preserve natural conditions, the environment, and urban areas (12)

4 Applied Study on toy furniture design

4-1 Zodiac table

This toy designed based on information about the zodiac and the relationship between them consisting of a round table and it revolves around an axis in the middle

And it can be played in many ways such as scrolling with using the light effects, and when you step, you see which zodiac sign stops and reads all the information related to it hidden in a small drawer under each one
Another way to play is to choose a zodiac, press its button, and see which one is harmonious or incompatible with others. Also in the middle, we can add a hologram units and when we press the button, zodiac sign will appear in the 3D hologram. A laser beam called a hologram is a spectrum of three-dimensional colors, suggesting to the viewer that the body is actually in the place where this spectrum appears, as if it were a reflection of reality and tells us about all the information of the zodiac with unlimited data can stored in it with the ability of adding or modifying the data because it, thus achieving a lot of enjoyment and endless diversity of the material presented through the piece of furniture. also the design can be implemented on a square table as well.

4-2 Lego units
The traditional toys shape such as LEGO can be inspired by designing furniture pieces that can be installed, dismantled and changed design based on units that are grouped together. This is one of the projects that I implemented this project with a group of students in the course that I taught at the MSA University at the academic year 2015-2016.

1-1 Smart table
I designed a smart table equipped with four seats, each of which consists of four different aspects of design to achieve diversity and difference in their situation during the playing all of this in addition to what the screen of different capabilities and unlimited special, which is connected to Wi-Fi on the Internet.
Results:
1. Toy furniture design concept is an expression to describe the design and use of all or part of furniture piece as a toy, using various materials or technological devices installed in it.
2. The toy furniture design categorized into (toy furniture design with traditional configuration and materials - toy furniture design using digital technology and equipped with technology to display two-dimensional content - toy furniture design equipped with technology to display 3D content such as a hologram)
3. Toy furniture should be made of environmentally friendly materials recyclable especially if the furniture will be available for children use
4. Old toys can be recycled into furniture
5. Toy furniture design can developed to design patterns that corresponds to the fields of (entertainment computing, digital entertainment games, entertainment education, and entertainment, exploratory behavior, therapeutic effect ...) which based on the interaction between user and the Piece of furniture
6. Toy furniture designs can be applied in some education-entertainment and entertainment technologies which sometimes called “gamification”
7. Toy furniture design can be used as an exploratory tool and learning what happens to express the behavior that is designed to focus on the subtleties of body language and gestures and an extension of simple human behaviors in the use and choice of piece of furniture, its colors and the way to sit on it.
8. The design of toy furniture is used in studying the physical effect of users, especially children, as they found that students who have standing desks are
more attentive than their seated counterparts, and this means reducing childhood obesity and relieving pressure on spinal structures that may occur with traditional offices.

9. Toy furniture design is used as a cognitive intervention where some positive aspects of play can enhance literacy, thinking, reflecting and creativity especially for children. Play promotes early development by at least 33%

10. Games can be beneficial for the growth and functioning of the brain and positive effects of games may also be related to therapeutic interventions that target mental disorders, especially depression, because entertainment relieves stress and is one of the best treatments and distractions to overcome it because mind thinks about other things and releases 'endorphins ' hormones Feeling satisfied, and this is a better way to deal with stress as it gives some time to relax and prepare mind to recover, and the effect of that is more effective if these games or toys are made up of the pieces of furniture or part of them, i.e. toy furniture designs

Recommendations:
It is recommended to

- Recommendation for researchers and academics in scientific colleges to study the principles and foundations of toy furniture design and how to benefit from it in developing a furniture design pattern that corresponds to the fields of (entertainment computing, digital entertainment games, entertainment education, and entertainment, exploratory behavior, therapeutic effect ...) which based on the interaction between the user and Piece of furniture, which will positively affect the economy by attracting new categories of customers

- Activating the role of the state like the Ministry of Education, Ministry of Industry and the Ministry of Planning and institutions in sponsoring of the furniture design especially which based on using technology like (Edutainment, infotainment ...) Also the furniture design based on recycling materials to strengthen a competitive advantage in this field

- Converting the results to applications by supporting research and development in this field to ensure the development of skills, tools and methodologies which are needed to cooperate between Integrated Sciences in furniture design and manufacturing such as mechanical and electrical Sciences, digital technology, technology of recycling ....etc

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