

## The Influence of Materials Technology in Developing the Concepts of Designing

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### **Abstract:**

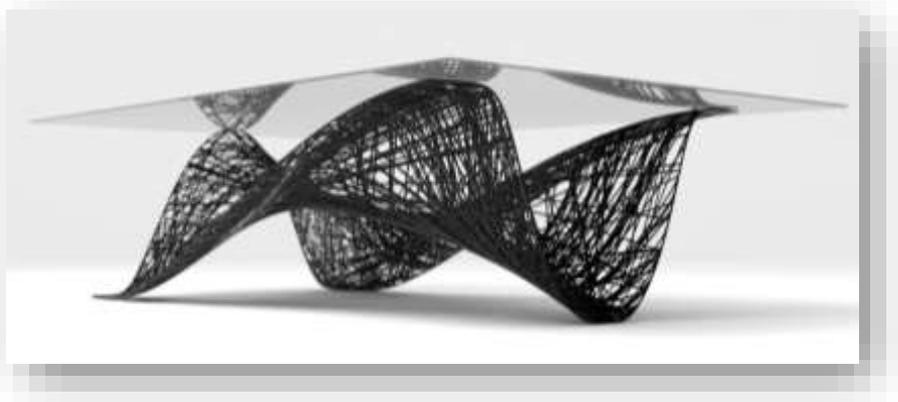
Technology development and upgradation have a prominent role in the development of interior designing and material formation for designing purposes. Technology serves both as a tool in support of material creation or as a means of delivering that product or commodity. The most interesting thing is to extend and use technology for the support of the individual's design-based learning process and to extend the learning opportunities as well as the materials knowledge so that one can be a part of the process. The development of materials and introduction of new materials instead of wood has given it a new charm and interior designing has now touched new heights. In this research study, the aim is to firstly identify the distinctive features of materials and materials that can give you amazing experiences, and refined beauty in terms of finishing of interiors. This also serves and study new features of the materials and new types of materials that affect and alter the development of interiors. The concluding remarks say that identifying and clarifying several issues raised in the wake of new technologies and new materials that are less to be produced in the future should be favored with less consideration. The focus should always be to promote new materials and highlight the existing ones to have a better combination of materials and replenish your designs. By viewing the glimpses of history, man has made use of materials that are readily available from nature. Later on, with the development of the industrial era through the last three centuries, there has been much more introduced, and the ability to synthesize new materials like plastic and fiber has made us unable to meet increasingly complex and demanding requirements. So, there shouldn't be a shortage of materials and designs could be modernized with time.

**Keywords:** Materials development, Material technology, Materials for designing, interior designing, fiber, plastics.

## 1. Introduction

Interior designing is a work of aesthetically defined and profoundly made designs that give a replenishing and promising look to your home. With the evolution of technologies, this has gone too much progressively. If you look in the past, remarkable progress could be seen in utilizing materials based on empirical knowledge of their properties and behaviors related to their source and subsequent treatment of the material upgradation. Many of the important alloys and ceramics were developed to prove this cause right and many upgrades are introduced in this way. This approach is still going on and is widely recognized. Various materials are formed and upgraded in this way to give thorough experience to the interior decorations (A. M. Patil, 2017)

Graphite is one of the examples of these materials which has solved important problems regarding missile technology where it is used to form rocket nozzles and being a structural component as well in nuclear-power reactors. Various progressive developments were achieved by an enlightened empirical approach throughout history was material-source oriented. Another complex material that is used in most interior designing applications is fiber (Figure1) whose physical properties depend on the nature and processing of raw materials, the quality of the initial raw materials, and a variety of processing variables.



**Figure (1)**  
**using carbon fibers in furniture allows more flexible designs to implement (materialdistrict.2022)**

The most practical approach to the development of special fiber and high-grade plastics is to withstand high temperature and pressure with the systematic application, therefore, giving you the processed material with enough properties on processing parameters (Jing Zhang, 2016). The starting point was the initial observations that hot pressing of normal-density plastics and fiber yielded a body of high density and high strength in terms of performance deliverance as well as finishing touches. The research studies and approaches were only able to provide a general framework for the planning and execution of these platforms and materials.

In the recent past, this interest in material upgradation and transformation has gone too far and necessities and their properties have been broadened over the years from that of the supplier up to the consumers. In various out-bound programs, such as space and the solid-state electronics industry, the material used may not meet all its objectives with the existing materials. This will put a flame to the discovery of the necessity that causes the user to become interested in the discovery and development of new materials and their use (Godsey, 2013).

It has brought new enthusiasts closer to each other and caused a closer working relationship to be established between the material developer and the material user. Further, the programs and efforts that run into materials limitations of such type that determine success and will streamline those efforts which are straining for the utmost sophisticated science and technology in line with the accordance of the requirements. It has now become natural and realistic for the people involved in expect materials development and usage and aiming to utilize scientific contributions.

With the use and research of technological innovations and upgrades, the world of design is aimed at improving people's lives. These design aesthetics and interior designers become critical observers of the world around them in assessing how existing designs can be further improved and how new opportunities could be identified and resolved. They put effort to discover new things and form new materials for such purposes. Their efforts and discoveries are tested over time and are bound to provide luxuries to the world with economic and societal aspects as well.



**Figure (2)**

**Coco Tiles one of the cheap materials can give beautiful results in design(mgsarchitecture.2022)**

Researchers and technologists learn to respond effectively and creatively with the application of new design methodologies and by building new materials that can minimize backup and restoration efforts to overcome costs problems and provide economic solutions (Figure 2). This way, they can develop confidence, acceptance, and competence in responding to problems as well as designing quality design solutions (Kang, 2009). The majority of experts and their efforts are spent making new materials and proposing new solutions for the hacks that overarch their processes. So, with the invention of new materials, there would be much ease. Theoretical concepts and skill development is focused on every project-based learning approach. Therefore, students and researchers also produce a design portfolio documenting the processes they use, and materials they employ with Computer-Aided Design to represent ideas and communicate effectively.

**Research problem:**

Can we use recycle/ neglected materials in interiors to minimize wasting materials as a step to Sustainability?

**Aim of the research:**

Identify the distinctive features of materials that can be used of finishing of interiors. Also serves and study new features of new types of materials that affect and alter the development of interiors.

**Research importance:**

The importance of this research lies in using new materials in interiors as recycles and neglected fibers.

**Research field:**

Interior design; sustainable materials.

**Research Methodology:**

The research follows the descriptive analytical approach of using reusable materials in interiors instead of typical ones. The research also aims to reach the responses of citizens to view their acceptance of using new materials. To achieve this, the descriptive analytical approach was used to overview opinions of a random sample of citizens were also discussed.

**2. Previous researches**

A previous research study conducted by Wujun Ye (Ye, 2019) with the subject of the application of modern building exterior wall materials in interior design has analyzed different sorts of materials for their application on exterior building walls. Moreover, they specially analyzed the application of plastic materials and ceramics, with the study of the close connection between materials, inspiring and advanced technology, and art in interior design. He termed interior designing as a way of combining technology and art, with the typical design implementation processes, as well as progressing with creative and imaginative design concepts. He gave useful ideas on design development and the development of new materials, as well as supporting the advancement of ideas and technology.

Another research study conducted by Jenny Bergstrom (Jenny Bergström, 2010) and his research fellows with the subject of discussing materials, their forms, and forms of practice for interior designing art, has discussed the development of ‘smart’ materials. They termed these materials as temporary, and their temporary nature could allow them to transform into multiple states of expression that could be controlled and monitored repeatedly.

For the preparation and development of these materials as well as application, there is a need to get engaged extensively with the knowledge and experience of materials in practice to get better use of them and implement them strategically. Their research study has discussed the concept of development of materials with some examples of art, design. They suggested the development of some new concepts and methods to study and analyze the design of becoming materials.

Meltem O Gurel (Gürel, 2010) has discussed another aspect of interior design with a new look and with a new idea. He came up with an idea of developing a studio that could be a way to study different aspects of interior design and could be a platform to discuss different aspects and impacts of colors. He discussed it with the subject of explorations in teaching sustainable design structure, with a way of presenting studio experience in interior design architecture. He called it a dynamic way to explore the creativity of sustainable structure in designs aesthetics. This research study was all about discussing ways and sharing experience to teach different meanings of sustainability and to build hope and interests of participants within different design applications that could be useful in implementing sustainable values.

They discussed it with their lab nature and results were recorded by observing the participants surveying what has come out as an output. The deduced the results that this could be the vital way to develop awareness of sustainability together with the concepts of interior design and making it a way of learning. Their results have suggested that this design plus sustainability duo should be addressed at lower levels and then further enhanced to cover every aspect of a curriculum.

Moving ahead with previous research studies and exploring the literature on said topic, here is another research study conducted by Amira Saody Mohamed Abouelela (Abouelela, 2020) with the subject of concept design experiment transformation with the help of transparent concrete technology. Here this is a new concept and is introduced in recent past. This is all about technological evolution and advancement that might resulted in materials technology being updated and finalizing the development of preservation of the environment and energy.

This transparent concrete technology together with its advanced technology is a way to enhance the design process and achieve modern

environmental design thinking. This is way to enhance and advance environmental requirements. But the question here is how to use the traditional construction technology and materials and how to transform the process into transparent concrete technology, how to develop the mechanism of transfer together with changing its characteristics and advantages (Figure 3).



**Figure (3)**  
**Using transparent concrete gives wider field of design**  
**(urbanglass.2010)**

This has opened new way of transforming the applications of architectural design, interior architecture, and perceiving new and innovative thinking, different types of interactions between the building and its environment. The aim of this research study was to build the mechanism of soft transformation, how to come up with a new way of combining the advantages of concrete construction with permeable natural light, that will be the way to reduce energy consumption. With so much movement and adaption of urban life style, with drastic population growth and many nearby buildings aligned with each other closely, this could be the way and solution to reduce the passage of natural sunlight and developing a new special concrete material.

The work has not ended here. It has totally transformed the traditional building materials of solid gray color through a technological development which implies a new and light colored, transparent material. Their development of an innovative and dynamic material which is more

resistant and lighter, possessing White or other light colors, being able to adapt to new challenges and could become more rigid with the mixing of fiber glass together with concrete mixture.

This new type of building materials can become a way of development of green architecture which will be the key to perceive sustainability mechanisms. These emit and absorb light and give good exposure to direct sunlight and are insulating materials that will prevent from harsh climate and give you full coverage of every weather. With these abilities and structure, these are resistant to high temperatures or cold, while preserving the daylight, could be the best possible way for different applications of modern interior design.

A previous research study conducted by Harshita Srivastava (Harshita Srivastava, 2017) and her research fellow with the aim of presenting and assessing the perspectives of interior designers towards adapting eco-friendly materials that are easily available in interior designing. They have conducted a research study based on sampling methods and purposive sampling technique is applied to choose the participants at random. Their participants were architects, interior designers, consultants, and students, or contractors as well. They had built an open-ended questionnaire to collect the response of respondents and draw the trends or opinions regarding spreading the awareness of eco-friendly materials and their practical application.

Their respondents from Mumbai city look to be more aware of eco-friendly materials and environment friendly interior designing methods. When they classified their respondents according to their gender, they found out that majority of respondents were males and females are there with low interest and less numbers. So, their study has suggested that interior and architectural designing is still the male dominated profession and males show better expertise, better exposure, and better ideas due to more awareness level.

### **3. Our need for sustainability**

The world of designing is constantly evolving, introducing new materials and trends to give wonders to clients. Interiors are now aiming to integrate their technology evolution with the users, regardless of their style tastes. These innovations come with different styles and tastes. These are also combined with the need for durability and sustainability, interior

designers also pay higher prices for finishes or final touches to their design more than the design itself because they know this way it will last much longer. Producers and material manufacturers across the globe are now creating new and innovative materials that not only beautiful finishes but also focus on environment-friendly materials and designs. However, coming with 100% new product is difficult in modern times, so designers are working to reinvent and evaluate the use of existing materials and how these could be transformed through original ways to create beautiful schemes. Let's learn and understand new ideas that work for the development of the new materials and make use of it with great aesthetics.

### 3.1 New Finishes Technologies and Materials

There are experts and interior designers that are working to develop brand new finishing technologies and materials, with the focus on hard finishes for walls, floors, and ceilings. They are working on new materials involving plastics and fiber. These materials are not only designed to look great but also give hardwearing for daily residential use. One such finishing touch is Max Fine tiles (Figure 4), a new collection of tiles from Italian ceramics company FMG.



**Figure (4)**  
**Max Fine tiles makes an excellent solution in interiors (southlanstone.2022).**

The large-scale tiles are only six millimeters in thickness so that these could be used not only on walls and floors but also across hard furnishings.

This way the minimization of barriers between surfaces for architecture and furnishing could be done. These tiles are crafted from porcelain, with their surfaces ultra-realistic, and designed to tackle and highlight various natural stones, metals, and marble. With another cause of ensuring durability, FMG has made these tiles to be scratch-resistant, together with UV, stain, and mold resistant (Malec-Zięba, 2020).

Endicott is another name in such formations that are developing such tile solutions. They are using clay and natural minerals, and create ultra-thin glazed brick, with a thickness of the only ½". Their versatile brick formation can not only be used on both interior and exterior surfaces but will also provide you a huge range of sizes and colors to suit and fulfill the requirements of any design scheme.

### **3.2 Sustainable Materials and their involvement in Modern Designs**

Moving ahead with the Kyoto and other protocols, there is a need to put efforts in reducing energy emissions and this has led to the increased use of sustainably sourced timber, both inside and outside residencies. Though using wood for the indoors and outdoors seems bygone days idea, yet it implies in modern designs. Despite being a classic material, timber is actively and progressively used in different ways to create modern, welcoming spaces (Figure 5).

**Figure 5**  
classic  
materials as  
wood still the  
most desirable  
solution in  
designing  
modern  
interiors(caan  
design.2020).



With such implications of timber and its associative, interior designers are incorporating plants within those design applications, thus building more economical and sustainable solutions, especially in urban areas where green space is minimal (AYALP, 2012). The concept of this plant inclusion and bringing the outside in has been focused on and explored by different architects and designers in the past. This will also help in creating peaceful charm and friendly space for residents, allowing them to come out of the hustle and bustle of the world outside their home. However, designers must work for the longevity of these projects, because with time they need to make sure that the plants require minimal care to not impact busy schedules (Pilatowicz, 2015).

### 3.3 Forward to sustainability by using recyclable Materials

With a focus on reducing wastes, carbon footprints, going green, and sustainability cause, the manufacturers must consider how much waste their product will produce, and how it could be recycled for another use (Figure 6); or either it could be recycled or not. An example of London-based Design Company Newtab22, work for and look at ways that how they can take a waste product from another industry to create something new and innovative.



**Figure (6). Reused & recycled materials in furniture would help materials sustainability(corkfurniture.2020)**

Another such formation and significant technique are developed by designers Hyein Choi and Jihee Moon while coming up with a new concrete-like material made from discarded seashells. They arranged on collecting these shells and harvested these shells from those which are destined for landfill, discarded, and left by the seafood industry (Figure 7). Though these are non-biodegradable, seashells are making their huge and ever-lasting impact of pollution for both sea and land, and so the Newtab22 come up with the idea of upcycling them to create a zero-waste material.



**Figure (7)**  
**Using natural neglected materials would help reducing the use of natural resources(dezeen.2020)**

The shells possess calcium carbonate in their formation, giving them similar properties to the limestone that is an active part of the cement. After salvaging these seashells, these are ground down and combined with natural binding agents to create the much-awaited concrete-like material that is another formation for cement formation for use in building construction and finishing. Although this is now in a development phase, yet this is one of a long line of steps in the right direction for sustainable material formation.

### **3.4 Flexible Design Solutions using soft materials**

Hard materials like we discussed earlier in the above section including tiles and other concrete type materials are not the only products being developed in the recent past and in modern formations to use in modern interiors. Lighting is also considered one of the basic and main formation materials among others. With the simplest lighting schemes, interior design could be completely changed and will transform the feel of your home. Color therapy is considered to be an increasingly popular, modern, and realistic phenomenon with clients aiming to use colored lighting to enhance the atmosphere of the specific spaces. Designers use neon lights in creating and enhancing the look of these spaces. Normally these are associated with signage like that used in Times Square and Las Vegas. These neon lightings are branching out into interiors, and are providing kitsch vintage schemes. Neon lights are used to create

atmospheric spaces within the homes and transform the look and feel of a room.

This is another way to create a colorful, atmospheric interior, and with the use of translucent colored panes in the façade. Rodeca is one of the leading manufacturers of translucent panes, normally employed and installed in commercial buildings (Figure 8). The company is now targeting residential projects, using colored panes to create thoughtful and progressive interiors. Unlike neon lights, the light emitted from the panels cannot be controlled by the residents, so this might not be a good option if the desired effect is not achieved.



**Figure (8)**

**Diversity in the use of materials has become a feature of the current era. LED action façade, Madrid, Spain(simbiosisgroup.2010)**

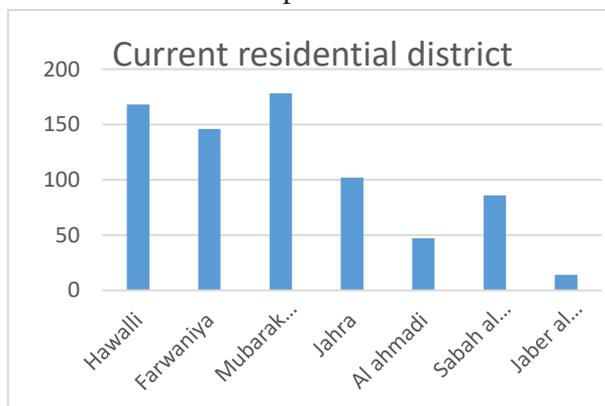
The snapshot of the neon panels like the one is pasted above is a new addition to the market, with many more in the development phase. The focus is entirely on sustainability causes and is grabbing the attention of the manufacturers to come up with innovations and suit the thinking and requirements of their users. So, they provide the designers with up-to-date materials and new interior design trends, which employ and install new materials. But there is a need to think about how it could be more innovative, how it can stand out in the formation of interiors, and how it could be used to create beautiful and memorable spaces. Spending more on finishing will lead to longer-lasting schemes that will inspire other designers and residents as well.

### 3.5 Designing with Glass

The English architect Norman Foster designed the complex building of most important coverage employer Willis, PAber and Dumas in Headquarters for (1975-1972, United Kingdom/Ipswich). even though the region masking the building could be very big, The outdoors of the glass without the want for metallic frames. The set up of glass at the rear relies upon on thin and glued glass panels and the rest of the panels are hooked up with vertical inclusion Alia, this is, to be inspired through the fixed glass slides, those elements that the galf holds the glass constructing and due to the steadiness in strengthened inside the equal Glazing Structural.

### 4. Survey results

A survey been made by the researcher on randomly 1000 Kuwaiti citizens selected from different areas of Kuwait (Figure 9), and from different ages (Figure 10). You can find the sample details below.



**Figure (9)**

Chart shows the chosen sample from different areas of Kuwait

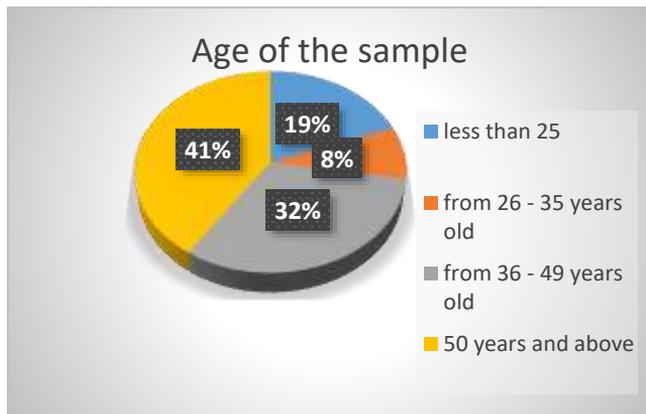


Figure (10)

**Chart shows the age of the chosen sample**

The question that was asked if you prefer to use normal materials that available in local market or using natural neglected materials. The result was 384 persons were not interested using recycled materials. 476 answered were satisfied with the current materials, 64 persons didn't decide what to choose from those two materials, and 28 persons decide it's better to combine with both materials (Figure 11).

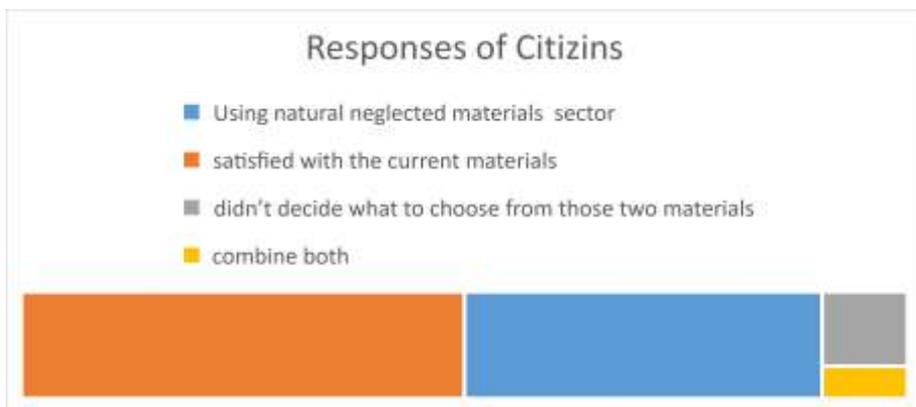


Figure (11)

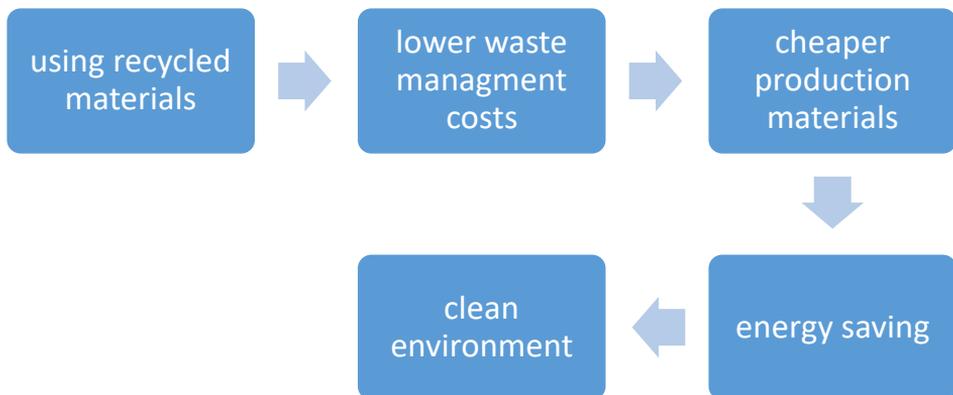
**Responses of the citizens who answered the survey**

It was notice that citizens with ageless than 25 & 26-35 were prefer using new materials than the group of age 50 years & above, which they didn't mind using recyclable materials. Also, it was noticeable that the

male was more accepting using recyclable materials than female responses.

## 5. Conclusion

A large amount of waste products that are produced with the use of materials could be used in the formation of new and usable materials that can enhance the structure of interior designs and can give it a shiny and classy look. These formations and materials could be replaced with new in terms of relocations and reorganizations of materials for the sake of both the private and the public sector uplifting. This research study has given the idea of using different interior designing materials and has worked in the emerging field of interior design that seeks to enhance sustainability in homes and workspaces with the use of existing furniture and materials. Designers interact with materials not only to explore what they offer within the design concept but also how their offers can affect the concept of redesigning (Figure 12).



**Figure (12)**

### **Benefit of using recycled materials in interior design**

Recent theoretical debates within new materialism technologies and upgradations can illuminate how efforts could be put together to produce socio-material outcomes. The formation of new materials can uplift and enhance the effects of interior design and can highlight the already made effects with new additions. The addition of fiber and plastic-made materials as well as lights and neon panels could replenish your designs,

to give them a classy look. Learn about what your design requires and interact with your designer to have a better understanding of designing and apply those tactics to make your place enthusiastic. Because a place more enthusiastic will reflect on your mood and will contribute to human performance as well.

## **6. Recommendations**

It's time to think different by using recycle materials to help protect the environment and to sustain resources to coming generations. designers and architects had big role in educate clients to use recycle and neglect materials if the clients are not ready to accept them.

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## تأثير تقنية المواد في تطوير مفاهيم التصميم

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المستخلص:

يلعب تطوير التكنولوجيا دورًا بارزًا في تحديث التصميم الداخلي وتكوين المواد لأغراض التصميم، كما تعمل التكنولوجيا كأداة لدعم إنشاء المواد أو كوسيلة لتقديم هذا المنتج أو السلعة. الشيء الأكثر إثارة للاهتمام هو توسيع واستخدام التكنولوجيا لدعم عملية التعلم القائمة على التصميم للفرد وتوسيع فرص التعلم بالإضافة إلى معرفة المواد بحيث يمكن للمرء أن يكون جزءًا من العملية التصميمية. لقد منحها تطوير المواد وإدخال مواد جديدة بدلاً من الخشب سحرًا جديدًا وقد لامس التصميم الداخلي الآن أفقًا جديدًا. الهدف في هذه الدراسة البحثية هو أولاً تحديد السمات المميزة للمواد والخامات التي يمكن أن تمنحك تجارب مدهشة وجمالاً راقياً من حيث تشطيب الديكورات الداخلية. يخدم هذا أيضًا ويدرس الميزات الجديدة للمواد والأنواع الحديثة منها والتي تؤثر على تطور التصميمات الداخلية وتغيره. تشير الملاحظات الختامية إلى أن تحديد وتوضيح العديد من القضايا التي أثرت في أعقاب التقنيات الجديدة والمواد الجديدة التي لا يمكن إنتاجها في المستقبل يجب تفضيلها بقدر أقل من الاهتمام. يجب أن يكون التركيز دائمًا على الترويج للمواد الجديدة وإبراز المواد الموجودة للحصول على مزيج أفضل من المواد وتجديد التصميمات. من خلال عرض لمحات من التاريخ، استفاد الإنسان من مواد متاحة بسهولة من الطبيعة. في وقت لاحق، مع تطور العصر الصناعي خلال القرون الثلاثة الماضية، تم تقديم المزيد، كما أن القدرة على تصنيع مواد جديدة مثل البلاستيك والألياف جعلتنا غير قادرين على تلبية المتطلبات المعقدة والمتغيرة بشكل متزايد. لذلك، لا ينبغي أن يكون هناك نقص في المواد ويمكن تحديث التصميم مع مرور الوقت.

الكلمات المفتاحية:

تطوير المواد؛ تكنولوجيا المواد؛ مواد التصميم؛ التصميم الداخلي؛ الألياف؛ البلاستيك.