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Indoor Environment Design Education and Smart Home Under the Background of Internet

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ABSTRACT

This article mainly discusses the integration of smart home technology and interior environment design under the background of the Internet, as well as their application in the field of education. First, the basic concepts of smart home technology and interior environment design are introduced. Then, the opportunities and challenges in their fusion process are analyzed, and the innovation models and future development trends are discussed. Finally, it discusses the opportunities and challenges of the integration of interior environment design education and smart home technology, puts forward relevant innovation models and emphasizes that innovation models also need to be constantly updated and adapted to market demand, and then expounds the future of interior environment design and smart home technology. Integration will be deeper and wider. Therefore, the integration of interior environment design education and smart home technology will be more important and necessary in the future, so as to cultivate design talents with innovative thinking and practical ability.

KEYWORDS

Interior Environment Design, Internet Technology, Smart Home, Teaching Innovation

INTRODUCTION

In today's era of rapid internet development, smart home technology has gradually become an indispensable part of people's lives (Fang et al., 2020). With the popularization and application of smart homes, indoor environment design is becoming increasingly important to daily life (Wang & Hou, 2021). The purpose of interior environment design is to make indoor spaces comfortable, beautiful, healthy, and safe, while the purpose of smart home technology is to achieve intelligent management and control of the indoor environment through intelligent devices and systems. The combination of indoor environmental design and smart home technology can provide users with a more comfortable, healthy, safe, and intelligent indoor life experience (Li & Song, 2022). At the same time, interior environment design has gradually become the focus of attention. Therefore,

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a new question for research is that of how to adapt indoor environmental design education to the development of smart home technology.

Smart home technology refers to any technology that utilizes technologies such as the internet, the Internet of Things, and artificial intelligence to achieve remote control and management of home devices, environment, and security. Smart home technology can automatically adjust the indoor temperature, humidity, lighting, sound, and other conditions on the basis of users' needs and habits (Kim & Lee, 2019). It can also interact with users through voice, gesture, facial recognition, and other methods, providing entertainment, health, education, and other services. *Indoor environmental design* refers to a design activity that plans and creates the functions, forms, colors, materials, lighting, and other elements of indoor space on the basis of human physiological and psychological needs, as well as social and cultural backgrounds. Indoor environmental design aims to create a safe, comfortable, beautiful, and personalized indoor space that meets people's needs in various aspects of life, such as work and leisure (Kim & Lee, 2018).

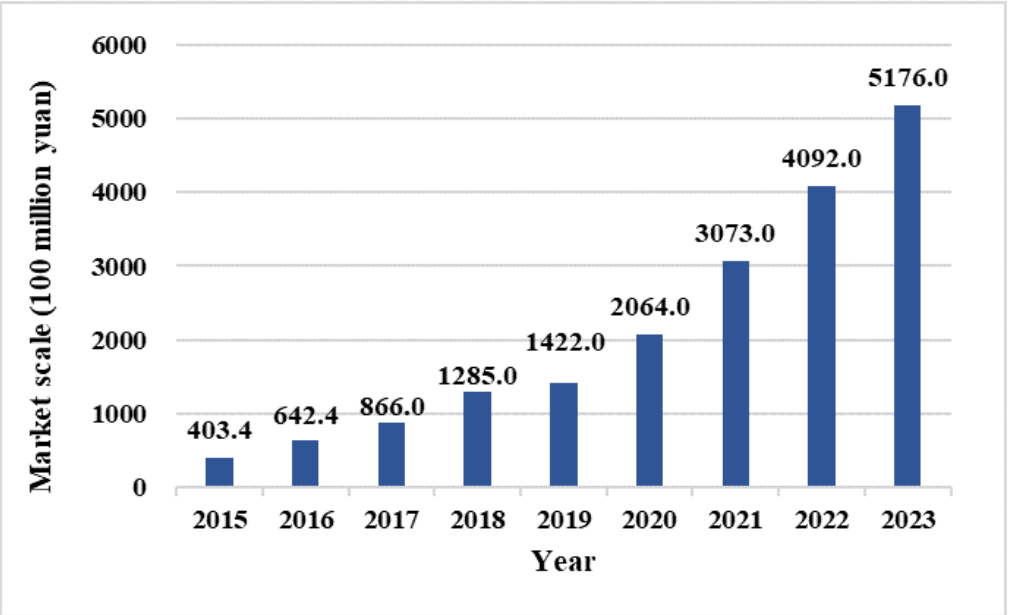
The integration of smart home technology with indoor environmental design is an interdisciplinary innovation model that can bring more possibilities and value to indoor spaces. For example, through smart home technology, indoor environmental design can achieve higher energy conservation and environmental protection. One way of doing this is the use of smart curtains, lighting, and air conditioning equipment to automatically adjust the indoor lighting and temperature according to outdoor weather and time changes, thereby reducing energy consumption and carbon emissions. Through smart home technology, indoor environment design can also achieve higher personalization and aesthetics. Using devices such as smart projectors, wallpapers, and picture frames, indoor patterns and colors can be changed at any time according to user's preferences and moods, thereby increasing the fun and artistry of the indoor space (Zhang & Wang, 2020).

In 2015 the scale of China's smart home market was 40.34 billion yuan, a year-on-year increase of 41.0% (Yang et al., 2018). By 2016, the size of China's smart home market was 64.24 billion yuan, a year-on-year increase of 59.3%. As of 2017, the scale of China's smart home market had grown to 86.6 billion yuan. According to preliminary estimates, the scale of China's smart home market was expected to exceed 100 billion yuan in 2018, reaching about 128.5 billion yuan. It is estimated that the scale of China's mart home market reached 142.2 billion yuan in 2019, showing a trend of increasing by 100 billion yuan year by year. If calculated according to the average annual compound growth rate of about 38.13% in the subsequent five years (2019-2023), we predict it will be found that the scale of China's smart home market exceeded 500 billion yuan in 2023. The statistics and forecast of China's smart home market scale from 2015 to 2023 are shown in Figure 1.

With the continuous development and popularization of smart home technology (demonstrated in Figure 1), indoor environmental design education needs to integrate smart home technology and applications into teaching content so as to cultivate talents for intelligent design thinking and skills (Aldrich, 2003). The application of smart home technology requires designers to have more comprehensive knowledge and skills. Therefore, indoor environmental design education needs to adopt more diversified forms of education (Machorro-Cano et al., 2020). With the popularization and application of smart homes, indoor environmental design has become increasingly important, and indoor environmental design education needs to adapt to this trend to meet market demand. However, indoor environmental design education has not yet fully adapted to the development of smart home technology. Therefore, indoor environmental design education now faces the urgent problem of how to better integrate smart home technology.

In response to this situation, this article aims to explore the integration of indoor environment design education and smart home technology in the context of the internet, analyze the current status and development trends of both indoor environment design education and smart home technology, and discuss the relationship between these two fields. It then proposes an integration scheme in order to provide some inspiration and reference for the future development of interior environment design education.

Figure 1. Statistics and forecast of China's smart home market scale from 2015 to 2023



INTERIOR DESIGN EDUCATION

This study adopts literature review and analysis as its main research method. Through careful synthesis and analysis of the relevant literature on interior design education and smart home technology, it explores these fields' development trends, current status, opportunities, challenges, and future development. On the basis of this analysis, the study proposes the potential benefits of integrating smart home technology into interior design education and proposes several innovative models to achieve this integration.

Overview of the Development of Interior Environmental Design Education

With the development of society and the changing needs of people, interior environment design education is also constantly evolving and developing. *Interior environment design education* refers to a series of educational activities, including curriculum setting, teaching methods, teaching material compilation, and other aspects of education (Kon et al., 2017). Its purpose is to improve students' theoretical knowledge and practical ability in interior environment design through systematic teaching and to cultivate interior environment designers with innovative thinking and practical operation abilities (Liao & Zhu, 2011).

Indoor environmental design education originated in Europe in the middle of the 19th century and was originally established to train interior decoration artists. Interior design education at that time was based mainly on manual drawing and artistic expression, focusing on the beauty and artistry of interior decoration, but lacked systematic training in space design, building materials, and construction techniques (Engineer et al., 2018).

With the development of industrialization and modernization, interior environment design education is gradually changing in terms of technology and practice. At the beginning of the 20th century, the Bauhaus School in Germany put forward the concept of "unity of art and craftsmanship," emphasizing that design should serve production and society (Chen et al., 2010). This concept has had a profound impact on interior environment design education and has prompted the development

of interior environment design education in the direction of industrialization (Taiwo et al., 2020). In the 1950s, American interior design education began to gradually form an independent subject system and began to adopt practical teaching and research methods, focusing on the cultivation of students' design ability and practical abilities (Liu, 2021). With the development of information technology and digital technology, interior environment design education has also begun to focus on the application of digital design and simulation technology in order to improve students' design expertise and competitiveness (Li et al., 2022).

Analysis of the Current Status of Indoor Environment Design Education

At present, interior environment design education has been widely developed and popularized around the world. In developed regions such as Europe and the United States, interior environment design education has become an independent discipline, and a large number of professionals have been trained. In China, interior environment design education started relatively late and is still in the early stages of development (Jabbar et al., 2019). However, with the gradual maturing of the domestic market and people's constant pursuit of quality of life, the demand for interior environment design continues to increase, and the prominence of interior environment design education is also increasing (Zhou et al., 2021).

However, in the current internet age, traditional interior environment design education can no longer meet people's needs. With the continuous development of smart home technology, people's requirements for indoor environment design include not only beauty and comfort but also intelligence and technology (Yi, 2019). Ito (2016) proposed a human body model based on computer simulation to evaluate the impact of the indoor environment on human physiological responses. This model can simulate the processes of temperature regulation, blood circulation, respiration, sweat gland secretion, and the effects of indoor environmental parameters such as temperature, humidity, and wind speed on these processes in the human body. This model can be used to optimize indoor environmental design and thus improve human comfort and health levels. Morozova et al. (2020) explored the feasibility of using high fidelity computational fluid dynamics (CFD) simulations for indoor environmental design and control. They compared the effects of different numerical methods and grid resolutions on the simulation results, as well as the sensitivity of different boundary conditions and turbulence models to the simulation results. They pointed out that high fidelity CFD simulation can provide more accurate and detailed indoor air flow and temperature distribution information, thus helping to improve indoor environmental quality and save energy.

Bower et al. (2019) systematically reviewed research on the impact of architectural environmental design on emotions, as well as methods for measuring emotions using neurophysiological and subjective indicators. They summarized the potential impact mechanisms of different elements in architectural environmental design (such as color, shape, texture, etc.) on emotions, as well as the advantages and disadvantages of neurophysiological indicators (such as electroencephalogram, heart rate variability, etc.) and subjective indicators (such as emotional scales, facial expressions, etc.). They suggested that future research should adopt multiple methods to evaluate the impact of architectural environmental design on emotions, as well as explore differences between individuals and cultural backgrounds.

This research shows that interior environment design education needs to be combined with smart home technology to cultivate professionals who are more adaptable to future social needs. Therefore, this article will start with the current status of interior environment design education and discuss how to integrate smart home technology into interior environment design education to improve teaching quality and cultivate more outstanding talents (Yiqing, 2022). At the same time, this article will also analyze the actual case in order to better explain the specific practical significance of the combination of indoor environment design education and smart home technology.

Indoor Environment Design Education in the Context of the Internet

"Internet + education" is the product of the deep integration of the internet and education. It skillfully integrates the internet into the details of education, improves the proportion of online teaching, and makes education move from closed to open. In online teaching, teachers can share and exchange teaching resources, while in offline classroom teaching, digital animation videos can be widely used to carry out teaching. Online, offline, and extracurricular collaboration can enhance the effectiveness of teaching. In the internet age, interior environment design education is facing opportunities and challenges. On the one hand, internet technology provides a wide range of platforms and opportunities for the innovation and development of interior environment design education, allowing students to better learn and master advanced interior environment design concepts and technologies. On the other hand, rapid changes and growth of competition have also brought severe challenges to interior environment design education (Yao, 2022; Cui & Xia, 2015). Therefore, determining how to seize opportunities and deal with challenges has become an important issue in the development of interior environment design education (He & Jazizadeh, 2022; Bing & Yan, 2022). In order to adapt to the needs of the internet age, interior environment design education needs to be constantly engaged in innovation to attain a teaching model that meets the needs of the times. On the one hand, the sharing and intercommunication of teaching resources can be realized through online education platforms, MOOCs, etc.; on the other hand, more innovative and effective teaching methods can be explored by combining advanced technologies such as smart home technology and virtual reality technology. This advancement will improve the quality of teaching and the learning experience of students (Jiang et al., 2016).

In the context of "Internet + education," online and offline blended learning is the key breakthrough direction of education. This article divides "blended learning" education into three dimensions: pre-class, classroom, and post-class. Before class, teachers can make extensive use of video animation teaching resources to replace classroom presentations by teachers. Teachers can make full use of the information sharing of "Internet + education " to search for teaching courseware on the teaching resources website. Research has shown that the first 10 minutes of learning is the most active period for students. If they exceed 10 minutes, the quality of students' learning will seriously decline, and the learning effect will deteriorate. After creating digital courseware, teachers can deliver the courseware to students in real time or upload it to online teaching platforms such as MOOC. In classroom teaching, digital animation video can also be integrated with other teaching methods for indoor environmental design education. For example, in order to enable students to learn more deeply, teaching questions can be used to guide learning, or teaching tasks can be used to drive learning. Teachers assign teaching questions or tasks related to knowledge points of indoor environmental design, allowing students to explore independently the questions or tasks. The post-class stage is a time for students to review and consolidate. First, teachers can assign certain teaching assignments to enable students to learn by doing and strengthen the in-depth exploration of indoor environmental design knowledge. Second, using "internet + education," teachers can encourage students to learn and collect resources on the internet and broaden learning channels. Third, students can establish good contact with teachers. If students have any confusion, they can promptly inquire from teachers through WeChat groups, educational platform messaging, and other methods to improve the effectiveness of teaching.

SMART HOME TECHNOLOGY IN THE CONTEXT OF THE INTERNET

Opportunities and Challenges

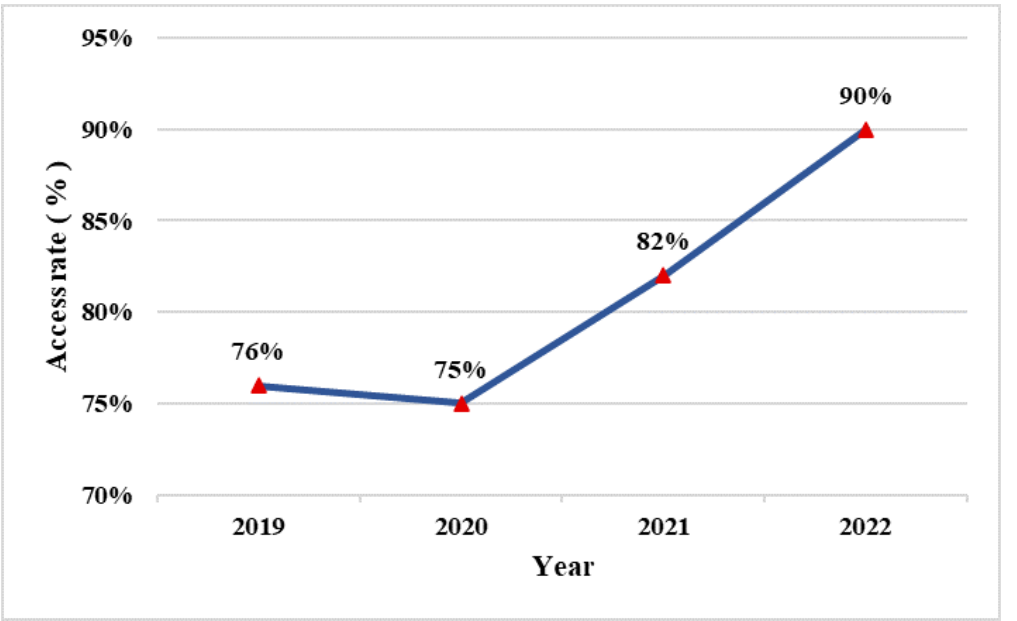
With the development of internet technology, smart home technology has developed rapidly, and smart home products have gradually entered thousands of households (Marikyan et al., 2023).

Internet technology has brought more opportunities for smart home technology to become an indispensable part of people's daily life. The role of network technology in smart homes is reflected mainly in the overall control this technology allows from a macro perspective. With the support of network technology, it is possible to achieve synchronous control of various types of household products. A macro intelligent control system, in essence, realizes the comprehensiveness and unity of intelligent furniture. This capability is also an important sign that intelligent furniture systems form a professional and integrated system (Lei, 2019). With the empowerment of 5G and AI, new internet home appliance companies have broken product boundaries, have upgraded home appliances and homes from single-product intelligence to scene intelligence, and have attained strong product development and iteration capabilities. Products and services have been diversified, and price advantages are becoming more and more obvious, greatly increasing the household entry rate for smart home products. The access rate for smart home internet platforms in China from 2019 to 2022 is shown in Figure 2.

The opportunities for smart home technology are manifested mainly in the following aspects:

1) Increasing market demand: With the development of the economy, people's living standards are gradually improving. The emergence of smart home technology meets people's need for a convenient, smart, and efficient lifestyle. More and more consumers are paying attention to smart home products, promoting the increase in market demand.
2) Continuous technological innovation: The continuous innovation and progress in smart home technology have greatly improved the functions and performance of smart home products, such as smart speakers, smart lights, smart door locks, etc. The application of these new technologies in smart homes brings more opportunities for growth.
3) Increased policy support: The government's support for smart home technology has continued to increase, accelerating the development of the smart home industry. Policy support can reduce the burden on companies and improve product research and development capabilities and market competitiveness, thus further promoting the rapid development of the smart home industry. In

Figure 2. 2019-2022 access rate for smart home internet platforms in China

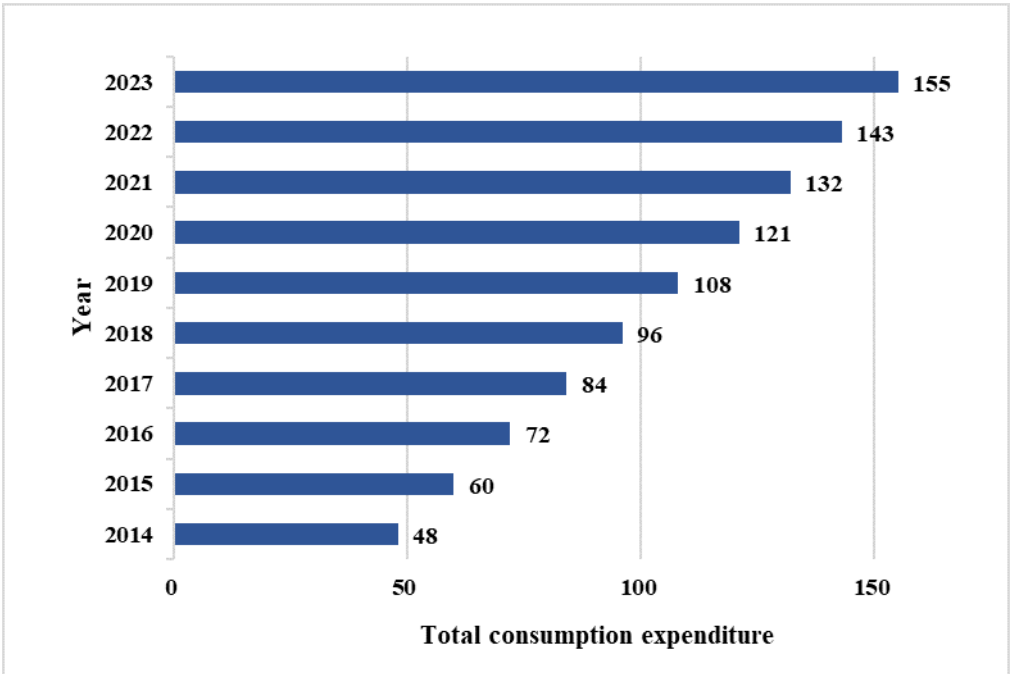


2018, global smart home spending, including equipment, systems, and service consumption, totaled nearly $96 billion and was expected to grow to $155 billion in 2023. The total global smart home consumption expenditure from 2014 to 2023 is shown in Figure 3.

However, the development of smart home technology in the context of the internet is also facing some challenges, mainly in the following aspects:

1) Different product standards: Because of the lack of uniform product standards in the smart home industry, product standards differ, making for difficulties in consumers' purchases.
2) Security issues: Smart home devices are usually connected to the internet, making network security one of the main difficulties in the development of smart home technology. If the network security of smart home devices is not guaranteed, there will be risks such as hacker attacks and information leakage.
3) Difficulties in the application of smart homes: The installation, debugging, and maintenance of smart home products require professional technology and knowledge. For ordinary users, it is difficult to master smart home technology, an obstacle which discourages some users. Another hindrance to popularization is that because of the wide variety of smart home products, users need to spend a long time studying the differences between various products and between their application processes.
4) High price: Smart home products usually have high prices. For ordinary families, it may take a long time to save before purchasing
5) The immaturity of the ecosystem: Smart home technology requires cooperation among multiple industrial fields, such as chips, software, hardware, and the internet.

Figure 3. 2014-2023 total global smart home consumption expenditure



Innovation Models

The innovation models of smart home technology are diverse, and with its strong integration, portability, and intelligentization characteristics, people can enjoy a more intelligent, convenient, comfortable, and safe life.

1) Platformization mode: In addition to providing interconnectivity between devices, smart home platforms can also provide users with more convenient and intelligent life services. For example, an intelligent voice assistant can perform functions such as allowing voice control of smart home devices, playing music, and answering weather queries. The intelligent scene mode can automatically complete a series of operations on the basis of the user's set scene, such as "leaving home mode," which can turn off all appliances, lock doors, windows, etc. with one click, and activate the monitoring system to improve home safety.
2) Intelligent customization mode: Smart home customization can be personalized on the basis of the user's needs and living environment; for instance, it can operate intelligent environmental monitoring instruments, record indoor temperature, humidity, air quality, and other data in real time, and customize improvements to the households through data analysis.
3) Smart community mode: Smart communities can combine smart home technology with community facilities to provide residents with more services, such as community smart express cabinets, smart parking lots, intelligent monitoring, etc. These services can facilitate residents' lives and improve the overall safety of the community.
4) Open cooperation mode: The open cooperation mode of smart home technology can combine smart home technology with other industry technologies; for instance, it can collaborate with logistics companies to make the logistics distribution process more convenient and efficient and collaborate with insurance companies to provide users with intelligent services and guarantees.

Future Development Trends

With the continuous development and popularization of smart home technology, smart homes will develop in a more convenient, intelligent, and personalized direction in the future. The following are some trends in the development of smart home technology in the future:

(1) Application of artificial intelligence technology: the application of artificial intelligence technology will make the smart home more intelligent; for instance, it will automatically adjust the home environment, recommending recipes on the basis of user tastes, etc.
(2) Development of wireless charging technology: wireless charging technology can solve the battery life problem of smart home devices; smart home design will pay more attention to wireless charging technology in the future.
(3) Application of virtual reality technology: the application of virtual reality technology can make smart homes more personalized and intelligent. For instance, it can create a virtual home environment through virtual reality technology to provide a more realistic and interactive experience.
(4) Diversified smart home products: in the future, smart home products will be more diversified; these will include smart door locks, smart home appliances, smart security systems, etc., forming a complete smart home ecosystem. In short, the development of smart home technology in the future will be more intelligent, convenient, personalized, and ecological.

INTEGRATION OF INDOOR ENVIRONMENT DESIGN AND SMART HOME TECHNOLOGY

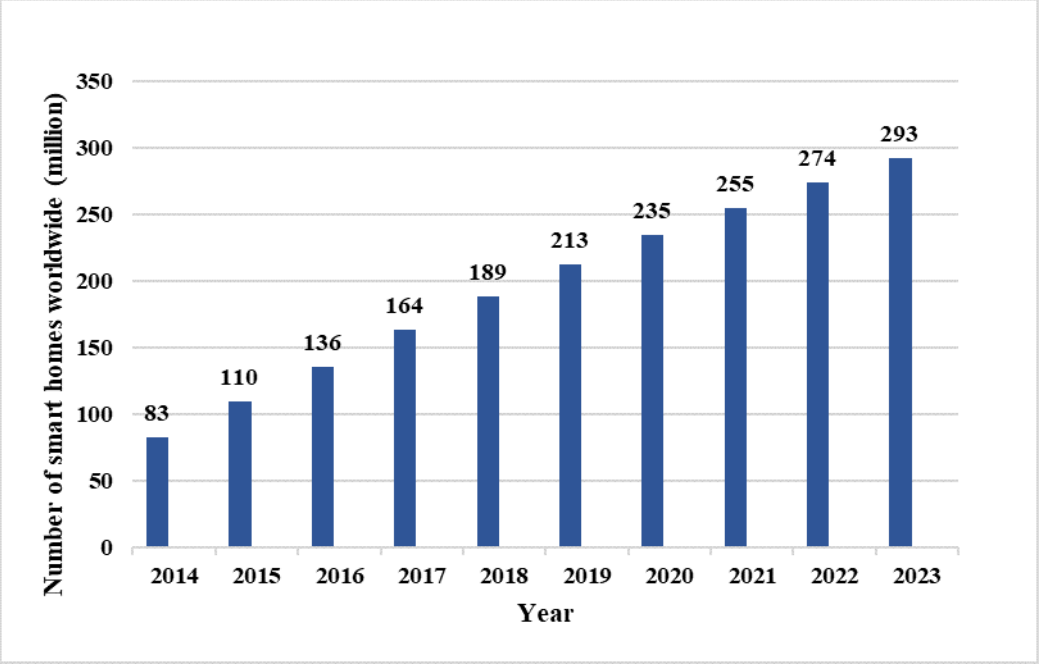
Overview

Smart home technology refers to a technical system that interconnects home equipment, home facilities, and home information through various smart devices and sensors to realize home automation, intelligent control, and intelligent management. Smart home technology can make it easier for people to control various affairs in the family and improve the living experience and quality of life. The history of smart home technology can be traced back to the 1960s, when the IBM Corporation of the United States developed the world's first smart home control system. With the rapid development of computer technology and the emergence of internet technology, smart home technology has also developed rapidly. In the early 21st century, with the development and application of internet of things technology, smart home technology has been more widely used and popularized; thus the smart home market has entered a period of rapid growth. With the rapid development of information technology and the increase in the number of smart homes, the global smart home consumer market is full of vitality. The number of global smart homes from 2014 to 2023 is shown in Figure 4.

At present, smart home technology has been widely used in smart home door locks, smart home appliances, smart speakers, and smart home security. The advantage of smart home technology is that it can establish interconnection and intercommunication between family devices so that people can more conveniently control, making it easier for people to control the quality of life for themselves and their families. However, smart home technology also has some problems, such as poor compatibility between devices, privacy and security issues, and so on. Therefore, the development of smart home technology still needs to be explored and improved.

Indoor environment design refers to the combination and processing of various factors such as color, light, material, furniture, and decoration in the interior space of a building so that the space can achieve good aesthetics, functionality, and comfort. *Smart home* refers to the use of the internet

Figure 4. Number of smart homes worldwide, 2014–2023



of things, artificial intelligence, and other technologies to connect household equipment, household appliances, and other items to realize interconnection, intelligent control, automatic management, and other functions and to improve the convenience and comfort of home life. Therefore, *the integration of indoor environment design and smart home* refers to the application of smart home technology in space design and layout in an indoor environment design to realize intelligent control and management of the indoor environment and improve the comfort and safety of the indoor environment. The integration of the two is highly feasible, because the concepts and methods it relies on are both enjoying a period of rapid progress.

The indoor environment design can fully implement its functions through reasonable planning from the perspective of spatial design through the development of design work for the function of intelligent household products.

Integration Status and Development Trends

With the development of smart home technology, more and more interior environment designers are beginning to apply smart home technology to their designs. For example, in a family living room, various parameters for lights, music, temperature, and other functions can be set according to different activity scenes to improve the comfort and atmosphere. In the kitchen smart home technology can be applied to cooking equipment, cabinets, lighting, etc., to improve the efficiency and safety of the kitchen. In the bedroom smart home technology can be applied to mattresses, curtains, air purifiers, etc., to improve sleep quality and quality of life.

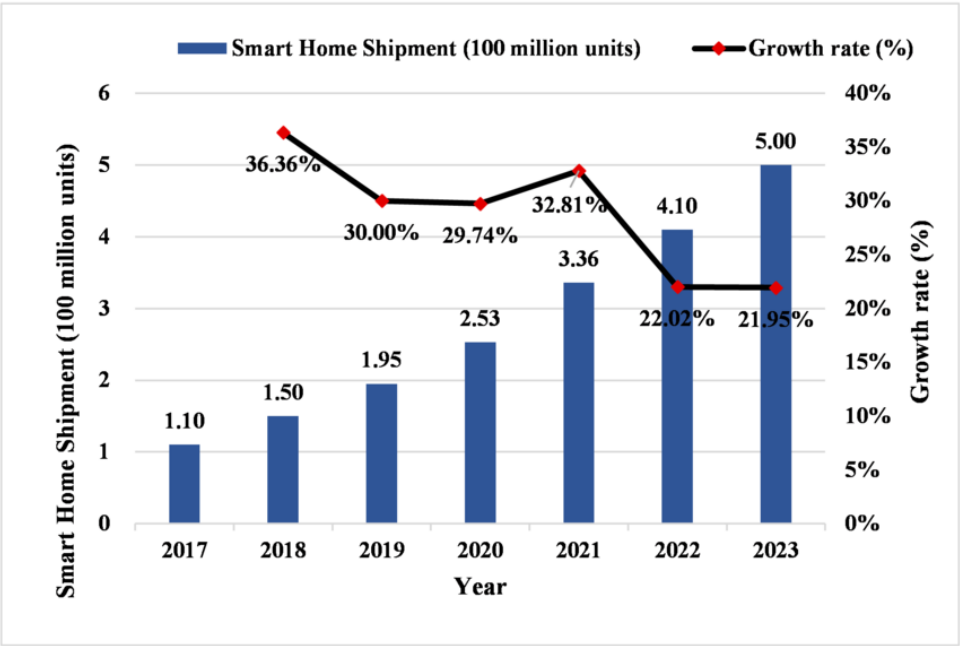
Intelligent technology can better introduce elements of the natural and ecological environment into the design of indoor environments, and through the application of intelligent technology, achieve reasonable control over natural resources such as light sources and water sources in applications, achieving a perfect integration of intelligent, green, and ecological indoor environmental design. At the same time, with the continuous development of smart home products, more and more smart home products have begun to focus on product appearance design and user experience, which are closely integrated with indoor environment design and are becoming an important part of indoor environment design.

Currently the trillion-dollar smart home market is being opened up, and smart home life is no longer out of reach for ordinary people. Therefore, the rapid growth of smart homes is being promoted. In 2018 China's smart home shipments increased by 36.7% year-on-year to 150 million units. Midea, Alibaba, and Baidu account for nearly half of the market share. Figure 5 shows China's smart home shipments and growth forecast from 2017 to 2023.

In the future the integration of indoor environment design and smart home will show the following trends:

(1) Personalization and customization: Smart home will pay more attention to the individual needs and preferences of users and provide users with more personalized indoor environment design solutions.
(2) Human–computer interaction: Smart homes will focus more on human–computer interaction design. Through artificial intelligence, voice recognition, and other technologies, more natural and convenient human–computer interaction methods will be realized, allowing users to enjoy the benefits brought by smart homes more comfortably.
(3) Data-driven design: With the development of big data technology, smart homes will focus more on data collection and analysis and carry out indoor environment design through data-driven methods to make the design more scientific and accurate and better satisfy the needs and preferences of users.
(4) Sensing and intelligent: In the future, through sensors and other technologies, the perception and understanding of user behavior will be realized, and more intelligent and adaptive indoor

Figure 5. 2017–2023 smart home shipments and growth forecast in China



environment design solutions will be provided to make users' lives more convenient and comfortable.

Opportunities and Challenges for Integration

The integration of interior environment design education and smart home refers to the introduction of smart home technology into interior environment design education. By learning smart home technology and applications, designers will be able to integrate smart home into the process of interior environment design to improve the comprehensive quality and technical level of interior environment design and thus meet ever-changing market demands.

Various opportunities are opening up for this integration:

(1) Improving the comprehensive quality of interior environment designers: The introduction of smart home technology can enable interior environment designers to understand and master the latest scientific and technological achievements and trends and improve their comprehensive quality and design level.
(2) Meeting market demand: With the continuous popularization of smart home technology, the market's demand for the integration of smart home and interior environment design is also increasing, and the ability of interior environment designers to integrate smart home technology has also become a competitive advantage.
(3) Broadening the career development possibilities of interior environment designers: Interior environment designers can learn smart home technology and applications and integrate smart home technology into design, thereby broadening their career development potential.

The integration of these fields also faces some challenges: (1) The integration of smart home technology and interior environment design education requires high-level teachers and educational resources. (2) Indoor environment designers need to have certain technical qualities and knowledge

reserves in order to better integrate smart home technology. (3) The update speed of smart home technology is very fast, and interior environment designers need to constantly follow up and learn new technologies to ensure practicality and forward-looking design. On the one hand, it is required that indoor environmental designers should transform from the perspective of design concepts, clarify the functions of intelligent household products and their relationship with indoor environmental design. On the other hand, from the perspective of specific design methods, it is required that indoor environment designers should master professional methods for indoor environment design that meet the requirements of smart home integration applications; they must also be able to achieve the integration design of the two in the most natural and scientific manner.

Innovation Model for Integration

The model we propose contains the following elements:

(1) Open relevant courses: In interior environment design education, set up courses related to smart home technology so that students can learn the basic skills and application scenarios of smart home technology and understand its integration with indoor environment design.
(2) Practical teaching: Establish practical projects, graduation design, etc., so that students can master the application of smart home technology in actual operation, improve their practical ability and skill level, and prepare for future employment.
(3) Combine industry, study, and research: Establish a cooperation mechanism between interior environment design education and the smart home industry so that students can get in touch with the latest smart home technology and products in industrial practice, and at the same time let the industry understand the needs of students and the direction of talent training, to better meet market demand.
(4) Diversified education: In the education of interior environment design, pay attention to diversified education, cultivate students' interdisciplinary ability, and integrate smart home technology with other disciplines, such as human–computer interaction, industrial design, etc., to enhance students' innovation ability and overall quality.
(5) Online education: Use internet technology and online education platforms to administer online courses and online practice projects related to smart home technology, so that more people can understand and learn smart home technology and so that the popularity and application of smart home technology will increase.

Whether it is pre-class learning, open online courses, or even online teaching, the feature of "Internet plus Education" is to make good use of students' extracurricular time. Implementing this kind of education requires sound supervision and management—for instance, giving pre class learning quizzes, etc.—to promote students' learning outcomes without teacher management. This effort is fundamental to ensuring the integration of indoor environmental design education and smart home technology in the context of the internet.

CONCLUSION

This article aims to explore the integration of smart home technology and interior design education in the context of the internet. It analyzes the current status and trends of interior design education and smart home technology, explores the relationship between them, and proposes integration solutions based on the trend of technology integration. This study emphasizes the importance and necessity of combining interior design education with smart home technology to cultivate innovative and practical design talents. In this process, we also referred to many previous research results, including the development status of indoor environmental design education and smart home technology,

the opportunities and challenges for smart home technology, and the current status and trends of the integration of indoor environmental design and smart home. To sum up, with the continuous development of internet technology and smart home technology, the trend toward integration of indoor environment design and smart home will gradually become obvious. This integration is important and necessary for cultivating design talents with innovative thinking and practical abilities. This paper discusses the teaching mode of online and offline blended learning mainly in the context of "internet plus" and the integration of smart home technology and indoor environment design. Secondly, it analyzes the application of the integration of the two in the field of education and the integration innovation model. Finally, the researchers believe that in the context of the internet, whether pre class learning or open online courses, in order to promote the learning effect of students without teacher management, it is necessary to improve supervision and management. This advancement is fundamental to ensuring the integration of indoor environmental design education and smart home technology in the context of the internet. This article explores the integration of smart home technology and indoor environment design mainly in the context of the internet and of its application in the field of education. We analyzed the opportunities and challenges for their integration process and explored future development trends. The limitations of this study lie in the various standards and safety issues of smart home products.

DATA AVAILABILITY

The figures used to support the findings of this study are included in the article.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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