

The New Office Space of Interior Lighting Design Research Form

Xiaoxuan Ding, Yuyi Yang and Jiawen Wang

School of Wuhan textile University, Wuhan 430073, China

Abstract: With the advent of the new era, the epidemic has had a profound impact on both work and life. The new form of office space should not only complete the work through lighting design, but also create a more healthy, comfortable, warm and humanized environment. This paper, through the thinking of unlimited office space, starts from the mobile, interleaved and interruptible space, and uses the design to create unlimited office from the overall style, space atmosphere and functionality of different lighting ways, etc. The new form of office space is reflected and improved due to the lighting design.

Keywords: Office Space; No Boundary; Lighting Design..

1. Introduction

Modern office space should not be simply an office space, each space should have different functions. The space can be an office space, an entertainment and leisure space, a discussion space, a display space, and so on. We will design the entire space as an open space without clear functional boundaries, which will increase employee mobility and fun in use. In this space, we emphasize the communication between employees and the surrounding environment to enhance the integration with the surrounding space, and analyze the new form of office space from the perspective of lighting to create a warm, comfortable, and borderless new form of office space.

2. The Integral Style of the Lighting Design and Office Space

The overall style of office space under the new form is different from that of traditional office space. From the perspective of lighting, there are two french window in the office space, which can make good use of natural light as the light source of the office space, making the space full of warmth and vitality; At the same time, artificial light sources such as chandeliers, down lights, spotlights, and light strips were selected as auxiliary light sources in the design. In most areas, the light is relatively cold, and the colors of lamps and furniture are mainly black, white, and gray. Therefore, when the light is illuminated in the office space, not only can it display the simple, atmospheric, and stable style of the entire space, but also the soft lighting is complemented by some natural wood color embellishments, It can more highlight the warmth and humanization of the entire space.

In design, the front desk is the first place that customers come in and see, so the design of the front desk is crucial as its style can establish the tone of the entire office space The front desk uses wood and stone, paired with ceiling and down lights, to add additional light sources to the space. And opposite the front desk is the glass door of the office, where the lighting is good and the natural light is abundant. Coupled with the soft light of the ceiling lamp, it appears simple, atmospheric, and warm. Choosing ceiling lights is because they have a wide range of shapes and can be paired with different spaces, making them a versatile lighting fixture. The installation of ceiling lights is simple, non laminated, and

saves space. On the left side, we also placed many artworks. At this point, we need down lights to enhance the spatial and three-dimensional sense. In the display, the light emitted by the tube lamp will hit the surface of the decoration, and shadows will be cast below the decoration, which can enhance the three-dimensional sense to a certain extent. Finally, the downlight does not occupy the original space, does not disrupt the overall style, and can also increase the softness of the space.

In the lighting of office areas, chandeliers are the choice of most designers, and their style will affect the overall style of the office space. In the office space, first choose to use white simple shaped chandeliers. In the lowered floors, white chandeliers will appear larger in space and higher in height, making people less oppressive. The light colors in the office area are widely used: white walls, black and white double-sided chairs, white cabinets, light yellow work tables, and white chandeliers will make the entire space more coordinated, simple, and atmospheric. And the pendant lamp is very close to the desktop, emitting the maximum amount of light on the desktop to meet the lighting needs of workers. At the same time, the light it emits is soft and does not make workers feel uncomfortable. In addition to chandeliers, spotlights and downlights are also the most commonly used indoor spaces. But because the light emitted by spotlights and downlights is relatively strong and the range of light exposure is not large, they will be arranged far from the subject being illuminated in terms of location, which can be clearly seen in the design ,see [Figure 1](#).



Figure 1. Close up photo of office area

In this design, the chandelier mainly meets the lighting needs near the desk, and the addition of spotlights can provide lighting for the entire space. Therefore, the spotlights are arranged at a certain distance from the desk to avoid concentrated and strong light causing dizziness for workers. The down light design is located in the hallway, where the black lines create a strong contrast with the large area of white in the office area. This not only creates a clear boundary with the office area, but also makes the space more layered, more composed, see [Figure 2](#).



Figure 2. Administrative area

The addition of downlights makes the lighting in the space softer and can greatly improve the overall brightness of the space. Therefore, downlights are also indispensable and important lighting fixtures in indoor spaces. They are easy to install and do not compress the floor height, making the indoor space spacious and comfortable. The style of lighting fixtures can directly affect the overall style of indoor space, so we should be cautious in the selection of lighting fixtures, and it is best to choose "versatile" lighting fixtures. In this design project, the lighting fixtures are mostly chosen in black and white. This type of lighting fixture without obvious style can be well combined with the overall indoor style, ultimately showcasing a simple, soft, and warm office environment.

The conference and discussion area are a crucial part of the entire space design. Because the design is an unbounded open office space, a relatively independent discussion area is necessary. Several meeting and discussion spaces have been designed throughout the entire space: a small discussion space in the office area, a large multi-person discussion room behind the office area, an independent discussion area with strong independence and privacy, a leisure and discussion integrated area, and a large conference space. The main lighting here is natural and artificial light, starting with a small independent discussion room, which is mainly used for group meetings and reporting work. Here, chandeliers and downlights are used, combined with natural light to create lighting for the conference area. On the furniture, a calm dark blue sofa and a black and white round table were selected, and the walls were decorated with log colors, making the entire space appear stable, serious, and warm under the light. The use of dark chandeliers not only provides local lighting for the space and has a good lighting effect, but also has a unique design with a deep red interior. The interesting color adds embellishments to the space and brings a sense of pleasure, see [Figure 3](#).

Compared to the independent meeting and discussion area, the discussion area in the office area is located in a public space. Unlike the independent meeting area, it has poor privacy and is suitable for discussing and making decisions

while working. In terms of lighting, direct lighting such as chandeliers is not used, but rather the lighting of the overall space is used for illumination, with a good sense of adaptability, see [Figure 4](#).



Figure 3. Independent meeting area



Figure 4. Discussion area

The large conference space is often used for company meetings and leadership decision-making, making it a highly serious space. So most of the furniture is black and white, and the lighting fixtures are mostly tube lights, which appear smooth and comfortable in the space. In the serious atmosphere of the conference area, it can blend with the overall style of the space.

A whole floor to ceiling glass has been designed in the leisure and entertainment area, where natural light is abundant and even without turning on the lights, it can meet people's needs for reading, relaxation, and rest. Therefore, there are no high illuminance lamps installed here, but instead light strips are used as supplementary light sources to illuminate the space. The lamp strip has a wide range of uses, it can be bent and easy to install, making it a versatile lamp. The light strip can serve as a supplementary light source to increase indirect lighting and eliminate shadows; You can also create a visual effect rendering atmosphere with different levels of brightness and positions of lights, creating a contrast between light and shade, and virtual and real effects, see [Figure 5](#).

Another leisure area is a space specifically designed for employees to get close to nature, enter nature, and relax. There is a whole french window here, which is full of natural light and does not need too bright light. So we choose downlights as supplementary light sources. The size of the downlights is small, and their style characteristics are not obvious. They can be well combined with the overall space style in the rest area, enhancing the warm and comfortable atmosphere of the space, and making the space softer, see [Figure 6](#).



Figure 5. Reading corner



Figure 6. Rest area

3. Lighting can Create a Sense of Atmosphere in Office Spaces



Figure 7. Bright office area and Dim office area

In the lighting design of office spaces, lighting should not only meet people's needs for light, but also shape the overall style of the space; Enhance the atmosphere of the space; Regulate and meet people's psychological needs. So lighting can create an atmosphere in the office space. The office space adopts an unbounded and open working mode, so natural light is essential in work. At the same time, down lights, spotlights, etc. are also used as auxiliary lighting, reflecting the atmosphere of efficient work and leisure coexistence in the entire space. Due to the fact that the office space is a quiet, peaceful, and requires complete concentration of energy, the color of the lighting in the office area should be a slightly cooler shade. However, once the light source is too cold, workers are prone to feeling tired and tired. At the same time, sufficient lighting is also necessary. In efficient office spaces, dim lighting may be rejected by designers. Comparing the bright office area with the dim office area yields the answer:

dim lighting can make employees dim and inefficient. Therefore, in the design, a large french window is set in the office space to make the space bright, see [Figure 7](#).

This space mainly uses natural light, with chandeliers and spotlights as auxiliary light sources. The light emitted by the chandelier will spread over a certain distance on the desk, making the light bright and soft. It can clearly complete the work without harming the workers' eyes, and to some extent, alleviate the visual fatigue of workers. Spotlights are placed in the hallway of the work area, mainly to illuminate the entire space, and the light will also be slightly stronger than that of chandeliers. From an overall perspective, most office spaces use simple and lively lines and a small amount of curved lines to create an efficient, concise, and quiet atmosphere. Bright colors and exhilarating lighting environment are also required for office spaces.

The lighting design of conference rooms mostly needs to create a rigorous and stable atmosphere. The main function of a conference room is to discuss, discuss, and make decisions, so it is necessary to create a rigorous and stable atmosphere. Ordinary small meeting rooms and discussion rooms are different from large meeting areas. The lighting is generally designed to be brighter because a bright space makes workers more excited and discussions more efficient. The lighting in large meeting rooms mainly uses tube lights, which also protrude from the speaker's position, allowing employees to be more focused. Different types of meeting and discussion rooms will have different spatial characteristics and needs. Firstly, the large conference hall is the location for the company's employees to hold a meeting and is a serious and serious discussion venue. Therefore, the overall tone is mainly black, white, and gray, with some warm colors as auxiliary colors, which appears rigorous and humane. Most lighting uses cool colored light sources such as tube lamps and strip lights, which not only appear spacious but also appear very simple and stable in conference rooms. The irradiation range of the tube lamp is large, the light is soft, and there is a large distance from the conference table, which will not make users dizzy and dizzy during long-term use. Moreover, the application of cool light can also make people concentrate even in a somewhat tired state. The small meeting room and discussion room are places for employees to spontaneously discuss, so the overall color tone is warm, and there are also some bright embellishments in the color, making it lively. Create a warm and lively atmosphere on the lighting. In the small discussion room, chandeliers will be selected for key lighting in small areas, with soft lighting that can highlight key points. The small meeting room and discussion room are both illuminated by the entire space. In addition, most of these spaces rely on french window to introduce natural light, which will make people happy in addition to the serious and stable space atmosphere.

In order to have a more comfortable office space, a combination of natural and artificial light should be used to create a comfortable office lighting environment. Reduce direct and strong light in office and meeting areas, so that prolonged exposure does not cause discomfort and fatigue for workers. Therefore, in the design, the light emitted by the lighting will undergo some diffuse reflection, ultimately forming a soft and comfortable light for use; In order to have a more comfortable office space, the design of french window should be adopted more, so that the whole space will become bright through the irradiation of natural light, and then the artificial light will be supplemented by lighting will get twice

the result with half the effort. Because natural light is the most gentle and friendly, incorporating natural light into a space can create a soft and friendly atmosphere, allowing people to feel relaxed and comfortable after completing their work.

Applying different shades of light can give people different feelings, so cold colored light should be used in office and meeting areas, while natural and diffuse light should be used in rest and discussion areas. When we see cold and warm colors, we have different feelings: when we see cold blue, we feel cold and concentrate more; When we see the warm red color we will feel hot, irritable, and bored.

Looking at the office areas with cooler colors and warmer colors, we can clearly feel the reason why cold light sources are needed in the office and conference areas. Using cool light in office areas that require efficient work and meeting areas that require high concentration of energy can effectively alleviate the stress, anxiety, emotional stability, and fatigue of workers. Applying warm colored light sources in the rest area can make the space lazy, allowing people to relax and empty themselves in this space., see [Figure 8](#).



Figure 8. Comparison of different tones in office space

4. Lighting can Create Functional Office Spaces

In office spaces, the design of lighting provides a quiet feeling of being able to quickly engage in work. This high-efficiency work experience comes from bright spaces, cooler lighting, and a quiet atmosphere. The repetition of lighting and fixtures can create a quiet, peaceful, and tidy environment. In the office space, there will not be too many changes in lighting and lighting fixtures, which is the pursuit of a sense of unity in the space. This sense of unity can be extended to team consciousness, which is a factor of strong cohesion and high work efficiency among employees. In terms of lighting, supplementary light sources should interact with natural light: Most indoor office areas are located on the side of the floor glass, which can make good use of natural light. In addition, supplementary light is added to the space, allowing workers to see more clearly and the overall office space to be brighter, without glare or fatigue due to the dim environment.

In office spaces, the design of lighting should give people a feeling of bright space. The bright space here refers to the clean and bright color tone of the entire space, reasonable lighting layout, and sufficient light. Decorating bright colors

in a space can maintain a pleasant mood and give a clean feeling. At the same time, when soft light shines on bright walls, the reflection of light can increase indoor lighting during the day, reduce the use of artificial light sources, and save space operating costs. Finally, use bright colors as embellishments to transform the overall space from dull to lively and interesting, giving people a feeling of being illuminated.

In office spaces, the design of lighting should give people a sense of modernity. Integrate the exhibition hall with the office space in the design, pursuing spatial integration. In spaces without clear boundaries, changes in lighting are particularly important. Using spotlights and downlights in the display panel area to highlight the exhibits; Using chandeliers in the office area to supplement additional light sources; In the conference area, using down lights not only makes the space appear simple and atmospheric, but also highlights the administrative function of the conference room; Use light strips and down lights in the rest area to create a relaxed environment, allowing workers to enjoy their rest time.

5. New Energy-Saving Lights Can Reduce the Operating Costs of Office Space

Firstly, the energy-saving of new energy-saving lamps is mainly reflected in their high efficiency, so new energy-saving lamps must meet the quality requirements of high light efficiency, long service life, and good color rendering; Secondly, indirect lighting and semi indirect lighting have many advantages, utilizing computer light to form ambient light and save energy. In lighting design, direct lighting is used to provide the minimum illumination required for the entire environment, and employees can flexibly adjust local lighting through remote controls; Finally, make full use of natural light and arrange the office area, discussion area, and rest area to the south, while infrequently used meeting rooms, bathrooms, and stairwells to the north of the building. This can utilize more natural light and reduce artificial lighting time, thereby achieving the goal of saving energy and reducing company operating costs.

6. Conclusion

With the arrival of the new era, the functions of office space have quietly changed. It is not just an office space, but also needs to consider human needs and psychological conditions. This research has given me a new understanding of lighting: it turns out that it is not just about lighting functions, but more importantly, it affects the user's experience and psychological state by adjusting the cold and hot color tones of the light; By combining different natural light, artificial light, and furniture colors to express the different styles of the space you want to present; Create a sense of atmosphere in different areas through direct lighting, semi direct lighting, and diffuse reflection lighting methods. Therefore, the lighting design of office spaces is increasingly valued. How to use lighting to create an overall style of space, how to use lighting to adjust different atmospheres in different areas, and how to make workers feel warm and happy are all issues that we need to constantly consider. Designers should focus on the present and make corresponding adjustments to the lighting design of office spaces based on the current situation, designing works that meet the current needs.

References

- [1] Jiang Xu, Wang Yun On the Integration and Transformation of Spatial Functionality - Office Space Design [J] Art and Technology, 2014 (5): 294-294.
- [2] Tan Chong, The lighting design elements of modern office spaces [J] Building Engineering Technology and Design, 2017 (19): 800-800.
- [3] Gu Pengbo, Analysis of Indoor Environmental Decoration Design in Office Space [J] Building Engineering Technology and Design, 2018 (27): 810-811.
- [4] Zhong Yinghui, Using comparative techniques for interior design and spatial atmosphere creation in commercial office spaces [J] Jiangxi Building Materials, 2014 (7): 40-40,41.
- [5] Liang Yanmin, Analysis of the Role of Lighting in Creating Atmosphere - Lighting Design of the Office Complex of a Municipal People's Congress [J] Technology Information, 2010 (36): 683-684.
- [6] Cui Rui, On the Creation of Light and Shadow Atmosphere in Office Space Design [J] Art Education Research, 2015 (23): 79.
- [7] Huo Yutong, Gao Junhong, Research on the Design Emotions of Colors, Lights, and Materials in Indoor Space Environment [J] Furniture and Interior Decoration, 2021 (1): 108-111.
- [8] Luo Yuanyuan, Personalized Design of Modern Office Space [J] Journal of Zhengzhou University of Light Industry (Social Science Edition), 2009,10 (6): 74-76.
- [9] Gao Hongyu, On the selection of lighting fixtures in interior design [J] Henan Science and Technology, 2013 (7): 140.
- [10] Yang Jinhua, Reflections on the Changes in Office Space Design Concepts from the Perspective of the Epidemic [J] Digital Design (Part 1), 2021,10 (1): 257-258.
- [11] Pang Xiaoxiao, Lighting Design in Interior Design [J] Building Materials and Decoration, 2017 (19): 79-80.
- [12] Tang Hong, On the Current Situation and Future of Lighting Design in Interior Design [J] Northern Literature: Part 2, 2012 (5): 262-263.
- [13] Bao Meihui, Low carbon exploration of indoor "green design" in office spaces [J] Light Textile Industry and Technology, 2021,50 (5): 74-76.
- [14] Yao Peiyu, Yang Jie, Zhang Xun, Zuo Chunlan, Chen Dahua. Improvement of Office Lighting System by Novel Luminaires [J]. Lighting and Lighting, 1998 (3): 1-4.
- [15] Wang Yutao, Explain how to achieve energy-saving lighting design in office spaces [J] Anhui Architecture, 2012,19 (3): 185-187,204.