

Computer-aided Personalized Lamp Design

Huang Ledan

Wenzhou Vocational & Technical College, Wenzhou. 325035

158731439@qq.com

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Abstract. Under the background of rapid development of modern science and technology, I make a theoretical and depth analysis on both physiological and psychological demands of lamp users to explore a more suitable feasible scheme through researching and analyzing the lamp which adapts human and social life best as well as combining with specific humanized design, ergonomics, design psychology and relevant knowledge about industrial design. As a small household appliance used for lighting in daily life, the lamp can be generally divided into column type and clip type. It has a long history, and in nowadays, people no longer only care about its lighting performance. In order to produce the lamp which could not only suit for the market, but also meet the demands of users, we need to constantly find new innovation and carry out sketches painting, and achieve the purpose that the lamp could become a major bright spot that embellish our life rather than a simple lighting tool.

1. Introduction

With the development of society and the improvement of substance level, the lamp has become an indispensable household appliance in our daily life. Meanwhile, people are longing for providing a range of higher quality products to themselves. As a result, their demand for the lamp develops from Simple lighting function to deep spiritual and cultural aspects.

2. Research analysis

2.1 Research objective

Familiar with and understand the current design and market dynamics, understand and master the relevant structure as well as process knowledge of the lamp. Analyze the potential demands of users and discover the insufficiency.

2.2 Research method

- 1) Conduct online research, view the relevant information about lamp, understand the latest news, research related products overseas and check various structures and prices in the shopping website.
- 2) Conduct market research and check products in related stores.
- 3) Conduct a visiting survey, ask about the thinking and ideas of students, residents and other classes around about the lamp and take notes.

2.3 Lamp category

Classify according to the usage functions: reading lamps and decorative lamp

Classify according to the style: modern lamp, antique lamp, European-style lamp and Chinese-style lamp.

Classify according to the material: metal lamp, resin lamp, glass lamp, crystal lamp, solid wood lamp, ceramic lamp and others.

3. Design positioning

3.1 Design concept

- 1) Meet the functional requirements and has excellent lighting function.
- 2) Meet the formal beauty of appearance, the form is complete with moderate center of gravity as well as appropriate proportion, in addition, there is certain creativity on the appearance.

3) Strive for simplicity and the combination with technology, and reduce the cost as much as possible.

3.2 Design positioning

- 1) Applicable environment positioning: bedroom, living room and study room
- 2) Applicable crowd positioning: the youth
- 3) Product positioning: simple, environmental protection, personality and beauty

4. Design scheme

This phase refers to the preliminary design of the overall image of product and the first goal is to find a satisfying appearance. Meanwhile, I also need to grasp the core of design -- meet the harmony between human and nature, rich their lives as well as increase the beauty and unique style. I design the appearance of the lamp into natural scenery and all the flowers and trees can be used as the elements for lamp modeling. Only applying a small part for lamp composition not only integrates natural scenery into life, but also makes the lamp simple and generous. Following is the scheme comparison:

4.1 Antique lamp

Antique lamp -- inspired by the ancient lantern, and its gradient type modeling has a sense of hierarchy. As shown in figure 1, if we can improve the color collocation of such waves, people will feel the magnificence of the sea as well as reduce stress and open mind in office and learning process. The model effect completed through using computer simulation analysis is shown in figure 2.

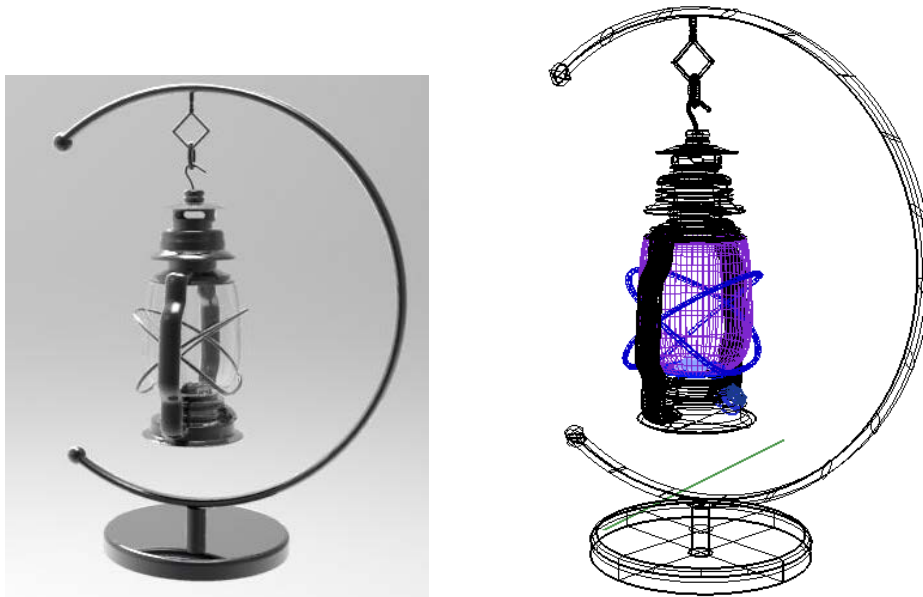


Figure 1 Antique lamp Figure 2 computer-aided three dimensional effect

4.2 Stamen lamp

Both stamens and petals are light sources, stamens present pale yellow while petals present pure white. This lamp reserves the original shape of jade orchid and the flower image gives us a warm feeling. It not only has a great illumination effect, but also is great decorative and beautiful. The squid is malleable which is convenient to adjust the angle of flowers as well as lighting direction to reach the most appropriate position. The lamp switch adopts the touch button, it imitates the concave groove of HOME key on Apple mobile and uses the principle of ergonomics to find the most appropriate depth for design, we may touch to turn on and turn off the lamp. The innovation point is that the petals may open and close according to the intensity of external light -- the petals will close and present a bud state when the light is strong; the petals will open and give a maximum illumination range when the light is weak. Wherein, light sources of stamens and petals can respectively control to achieve the effect of strong and weak. We may choose different colors for different flowers under various illumination intensities. An unique place of the combination between flowers and vase is that

Figure 5 LED lighting

5.2 Working principle

Current principle: alternate AC into DC which is more close to natural light and may achieve an illumination effect without any flash frequency as well as electromagnetic radiation.

Switch control: touch switch has the advantages of convenient and fashion. What is more important is that similar failure phenomenon of physical switch caused by frequent use will not happen. The working principle is to install electronic touch inside to form a control loop together with touch region as well as electrode plate. When any body part touches electrode induction, the touch signal will generate a pulse signal through pulsating direct current and transmit to touch sensing end. Meanwhile, this end will emit a trigger pulse signal to control the lamp. If touched again, the touch signal will generate a pulse signal through pulse direct current and transmit to touch sensing end, and the lamp will naturally go out when alternating current exceeds zero. However, the concern is that the lamp also can be lightened up after power failure or voltage instability. Sometimes, the paper or cloth with excellent sensitivity of touch receiving signal can also control the switch.

6. Summary

The most prominent feature of modern design is simple and fashion, while this cannot bring comfortable works to modern people. What they need is the design product that suits their lives, so as the lamp. It only pays attention to the concise and ignores the demand for beauty as well as the adaptability to environment. On the other hand, with the increase reading, families have more higher requirements for modern lamp and it is imperative to bring a healthier, more effective and more comfortable life, and this is also a topic which is worth exploring. As a result, if we design and create the lamp we use in daily life, if we could meet the pursuit of new things on appearance, it can become a pleasant lighting artist work.

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