Green Design and Sustainable Development of School Uniforms

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Abstract. Since the 1990s, the school uniform has gradually become an integral part of campus culture construction. A school uniform is not only an iconic symbol of students and a school, but also the carrier of campus culture, with special education function and cultural connotation. However in the same time, many problems exist in the design, making and material selection of school uniforms, in which, substandard fabric quality is the most serious problem. To ensure the quality, health and safety of school uniforms, in my opinion, priority should be given to green design and sustainable development in the design process of school uniforms, which will be more conducive to promoting the sound development of school uniforms. In today's economic development, the globalization of mass production is no longer just a symbol of challenging the limits of human beings, but to explore the unlimited potential of human spiritual collaboration. If we want to have a better future on this planet, we need to completely redefine the key issue we need to address, that is, green design. The rise of green products is a great progress of human understanding and solving environmental problems. It is the inevitable development trend of commodity production, and will have a profound impact on human survival and development in the future. School uniform is an important part of campus culture construction. In order to not damage the health of primary and secondary school students, in the school uniform design and production process should follow the concept of "green design" to achieve the school uniform style, color, material design, a comprehensive "green" positioning.

Keywords: School uniform; Green design; Sustainable Development.

1. Introduction
Movement, high durability and looseness & comfort, so it is the first choice of most schools in China. However, it also has a lot of problems. Such loose sportswear is ill-fitting, and makes students lack youthful spirit and freshness. As a result, it cannot fully show the primary and secondary students’ distinct personality and mental outlook in the new era, and the style seriously hinders the development of school uniforms. Therefore, the styles, the aesthetic nature and fashion elements of school uniform design are also important problems to be solved.

At present, there are more than 200 million primary and secondary students at school in China. Many schools require students to wear school uniforms, 2 sets at least and 4-6 sets at most for each student. Besides, since the two-child policy emerged, the number of primary and secondary students has risen perpendicularly. Therefore, China has a huge demand for school uniforms. Moreover, with the
deepening of education reform and the improvement of the education system, parents and students attach increasing importance to school uniforms. Thus, we urgently need to research, develop and improve secondary students’ school uniforms, and improve the quality of school uniforms so as to boost the sound and rapid development of secondary students’ school uniforms in China.

2. Current Common Problems in China’s School Uniforms

2.1. Dull Styles and a Lack of Aesthetic Nature and Fashion Elements

Students’ clothing styles include sportswear and uniforms, in which, sportswear takes a considerable proportion in most regions, becoming the mainstream of school uniforms. Influenced by economic and objective factors, the school uniform must be suitable for a variety of occasions. The sportswear has the advantages of convenient movement, high durability and looseness & comfort, so it is the first choice of most schools in China. However, it also has a lot of problems. Such loose sportswear is ill-fitting, and makes students lack youthful spirit and freshness. As a result, it cannot fully show the primary and secondary students’ distinct personality and mental outlook in the new era, and the style seriously hinders the development of school uniforms. Therefore, the styles, the aesthetic nature and fashion elements of school uniform design are also important problems to be solved.

2.2. Substandard Quality of School Uniforms

The substandard quality of school uniforms is mainly manifested in two aspects: first, the fabric quality problem; second, the craft quality problem. The fabric quality problem of school uniforms needs to be improved most. At present, most domestic school uniforms are made of sportswear fabric, dominated by cotton-circled polyester fasciated yarn. The quality of cotton-circled polyester fasciated yarn mainly depends on the thickness and cotton content. The thick fabric is high-priced while the thin fabric has a high technical requirement. Therefore, many regular manufacturers are unwilling to manufacture school uniforms due to the low profit, but some small enterprises may choose fabric at will, and are even likely to use poor-quality fabric that completely does not meet the national standard. For the fabric use of school uniforms, polyester is the most common. If the content of formaldehyde residue in the fabric exceeds the standard, it may cause students to suffer from anxiety, headache, respiratory illness or other related illness; besides, substandard color fastness may cause color fading easily, and the dye molecules and heavy metal ions in the pigment will be absorbed by the skin, jeopardizing health; substandard PH value may cause the clothes to be damaged under strong acid or alkali, irritate the skin and result in skin allergies, pruritus and so on. Moreover, though the fabric is convenient for movement, it may easily cause static electricity, and is not breathable, with a poor appearance effect. The craft quality problem means the problem in the craft production process, generally including many thread ends, seam slippage, fragile zippers, rough craft, broken needles and other phenomena. In particular, broken needles may hurt students. In addition, the labeled fiber content of clothes that is inconsistent with the actual condition is also a common problem in school uniform products. Therefore, we hope to elevate the quality of school uniforms by changing the material and sewing craft of school uniforms.

2.3. Dull Styles and a Lack of Aesthetic Nature and Fashion Elements

“Chemical pulps” are used in the fabric dyeing process. Nowadays, lots of printing and dyeing enterprises may adopt pulp hanging treatment for fabric for the purposes of increasing the fabric weight, and making the fabric look more attractive and feel firmer. The fabrics like cotton-circled polyester fasciated yarn which are mainly used for school uniforms will generally undergo pulp hanging treatment. Now, the international “starch pulp” has become the mainstream, but most domestic dyeing factories use “chemical pulps”. The fabric with such pulps appears firm with good resilience, but its formaldehyde residue problem is outstanding. Chemical materials are abused in fabric printing. In the production process of school uniforms, the fabric often needs to be printed with the school name and patterns. It is investigated that lots of school uniform manufacturers use paint and some other chemical materials in printing. In order to ensure smoother printing, some manufacturers even use diamine for paint mixing. Diamine is a chemical that may easily cause skin allergies or other adverse effects and
contains high-concentration formaldehyde. If students wear such uniforms in summer, it will cause huge harm.

2.4. Imperfect State Supervision and Administration System

For the production and quality control of school uniforms, China still lacks corresponding laws and regulations to impose restrictions. According to the information provided by the China National Institute of Standardization, China still has no quality standard concerning the quality of school uniforms and fabric thereof. The normative references only include the mandatory national standard Textiles – Limit to Formaldehyde Content implemented on January 1, 2003, as well as the “recommended” industry standards for children’s clothes and students’ clothes revised by the General Administration of Quality Supervision, Inspection and Quarantine of the People’s Republic of China. In most cases, the fabrics, markings and acceptance standards, etc. of school uniforms are mainly based on the contract requirements. In this case, the General Administration of Quality Supervision, Inspection and Quarantine can only make a decision according to several limited mandatory standards concerning the formaldehyde content, PH value, etc. of school uniforms, but can hardly make an explicit “statement” for whether the fabric components, fiber content and other indexes of school uniforms are up to standard.

For the above problems, we have a lot of considerations. Can we elevate the aesthetic nature, fashion elements and quality of school uniforms, enable students to take a real liking for their school uniforms and make our uniforms keep pace with the times?

3. Green Design and Sustainable Development of Primary and Secondary Students’ School Uniforms

3.1. School Uniform Style Developing Towards Human-Based Stage

Japan’s school uniform style is generally changed once a decade. When it is time to change, schools will go to the manufacturers to reserve new uniforms in advance, and redesign the style. Some schools will employ famous designers for the design. However, the school uniforms of secondary schools in China generally have neither fixed style nor fixed time for change. In general, one batch will have the same style, so it is difficult to distinguish the uniforms of one school from that of another. The sportswear-style school uniforms have existed for more than ten years in China. As the wheel of history has entered a new century, more and more people advocate the reform of school uniforms, with the addition of the invasion of the Japanese and South Korean school uniform trend. It is self-evident that on the big premise of economic and social development, school uniforms are facing the replacement development stage of styles. As China’s economy and education are both developing rapidly, should our school uniforms keep pace with the times? Should we design school uniforms that suit China’s primary and secondary schools by reference to the school uniforms of some developed countries like Japan and South Korea?

3.2. The Development of School Uniforms Should be Consistent with the Requirements of the Times – Green & Environment-Friendly Performance and Sustainable Development

We should improve the style design level of school uniforms, and gradually form a series of school uniform products concerning formal wear, sportswear, sweaters, shoes, socks and other accessories. For style design, the simple yet smooth line design may be adopted. For colors, sedate or bright tones may be adopted according to different seasons. The underclothes and the coat should be well matched; the texture and color selection of auxiliary fabrics and accessories should be coordinated; and the overall design style of main fabric and clothes should be mutually coordinated.

Importance should be attached to green and environment-friendly performance of fabric. In the fabric production process, high-tech means may be utilized to add comfort, breathability, crease resistance, wash-and-wear function and other functions to the fabric of school uniforms. In addition, attention should be paid to the green design trend. In the fabric selection and garment production process of school uniforms, the green production trend of textiles should be followed to further
strengthen the green and environment-friendly performance of fabric, and to enable school uniforms to meet the requirements for safety, health and comfort, the requirements for moderation, nature, saving and environmental protection, as well as the requirement for sustainable development.

3.3. Development Direction of China’s School Uniforms
The modern secondary students are generally confident, and always have original views and opinions on some things. Most students hold that school uniforms should have a big innovation. Some students consider that school uniforms should show sports and leisure features; some students consider that school uniforms should be modest and decent, and show the spiritual outlook of a student; some students hold that we should learn from the foreign school uniforms, draw on others’ successful experience, and create more brilliant school uniforms. Though opinions vary, pursuant to the international practice, students pursue the sense of maturity in their growing process. Therefore, school uniforms should be based on the principle of moderation and decency. The design style and development direction of China’s school uniforms should follow such a principle so as to gain vitality. It is the development direction of school uniforms. Besides, we should rely on Chinese culture and add fashion elements so as to meet the idea of focusing on students’ healthy growth, and flexibly apply the quintessence of such elements into the design of school uniforms to enable school uniforms to become a window for showing the Chinese culture and the mental outlook of the younger generation.

Green & environmental protection is an important keyword for the sustainable development in the 21st century. As a type of clothes, school uniforms should be added with the environmental protection concept, and the environmental awareness should be elevated to the first position from design and production to sales. Nowadays, the international environmental protection requirement for garment products is fairly strict. After China’s entry into WTO, the biggest challenge is to overcome the green barrier of textile trade, i.e., the whole process from planting to yarn weaving & dyeing, and from apparel accessories to overall fabrication of apparel must conform to the prescribed requirements. In the past, China did not attach enough importance to this aspect. In the future, we should vary with the development of the big environment of the global apparel industry.

4. Summary
With the continuous deepening of China’s education reform, the sustainable development path of school uniforms becomes an inevitable trend of the future development. An effective means to increase school competitiveness is showing the spiritual outlook, school-running policy and teaching quality of schools with the help of the strong symbolic function of school uniforms. In the new era, school uniforms should be carried forward, but not abandoned; the school uniform market should obtain more development, but not fade out. We believe as long as we attach importance to the sustainable development path of school uniforms, the status of China’s school uniforms will certainly develop towards the benign direction.

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