

사용자 경험을 바탕으로 하는 감성 디자인 방법 모델 연구

중국 유아 교사의 유니폼을 중심으로

A Study on the 'Model of Emotional Design Method' Based on User Experience

Focused on preschool teachers' uniform in China

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Abstract

In this paper, we will examine the principles of emotional design and design methods for uniforms. With the progress and development of society, the material function can no longer meet people's demand for products, but expand to the spiritual function, through the spiritual level of demand to integrate more emotions into the product, to meet the user's emotional experience. This research can expand the operational and emotional experience of uniforms, help users improve their work efficiency, and satisfy both their material and spiritual needs. This study takes preschool teachers as an example, preschool teachers as user subjects based on user experience and using user's emotional design methodology as support. Through literature research method, comparative research method, questionnaire survey and interview, the general job content and user needs of current Chinese preschool teachers were summarized, and the three layers of emotional design were corresponded to the uniform design, and the methodological model of emotional design of uniforms was expected to be obtained. This method model can provide new ideas and development directions for uniform design, help uniforms for specific groups of people to establish advantages in the market competition with serious homogenization, and provide reference for uniform design and selection.

Keyword

Uniform design(유니폼 디자인), Emotional design(감성 디자인), Preschool teachers(유아 교사)

요약

본 연구는 유니폼의 감성디자인 원칙과 디자인 방법을 연구하였다. 사회가 발전하고 진보함에 따라 물리적 기능은 더 이상 소비자들의 제품에 대한 수요를 충족시키지 못하고 있으며, 제품에 대한 수요는 감성적 기능으로 확대되어 감성차원의 다양한 수요를 통하여 제품과의 융합으로 사용자의 정서적 경험을 만족시키고 있다. 본 연구는 유니폼의 사용경험과 감성적 경험을 확장시켜 사용자의 업무 효율을 향상시키고 사용자의 물리적, 감성적 기능에 대한 이중 수요를 만족 시키는 것을 목적으로 하였다. 유니폼의 주요 사용자인 유아 교사의 사용자 경험을 바탕으로 사용자에게 대한 감성 디자인 방법론을 적용하여 접근하였다. 문헌 연구법, 비교 연구법, 설문조사 및 인터뷰 방식으로 현재 중국 유아 교사의 일반적인 업무활동과 사용자의 수요를 파악하고 감성 디자인의 세 가지 차원을 유니폼 디자인에 적용하여 유니폼의 감성 디자인 방법 모델을 도출하였다. 연구에 적용된 디자인 방법 모델은 유니폼 디자인에 새로운 사고방식과 발전 방향을 제공하고 특정 집단을 위한 유니폼 경쟁에서 우위를 점하고 유니폼 디자인과 선택에 대한 방향을 제시하고자 한다.

Index

1. Introduction

2. Theoretical Research

2-1. User Experience

2-2. Emotional Design

2-3. Emotional Design of Uniform

3. A Study and Analysis on the Current Situation of Preschool Teachers' Uniform

3-1. Research Process

3-2. User Needs Analysis

3-3. Results

4. Emotional Design Key Countermeasures for Preschool Teachers' Uniform

4-1. Visceral Layer of Emotional Design for Uniform

4-2. User Behavior and Behavioral Layer of Emotional Design

4-3. Reflective Layer of Emotional Design for Uniform

5. Uniform Emotional Design Method Application Model Summarization

5-1. Research on User Experience

5-2. Three Layers of Emotional Design for Uniform

5-3. Product Testing Improvement and Iteration

6. Conclusion and Prospect

Reference

1. Introduction

With the development of society and the progress of the times, people's attention to the product from the material function to expand the spiritual function, through the spiritual level of demand to integrate more human feelings and life interest into the design, to move people with emotions, scenarios, to bring the user a friendly, warm and comfortable emotional experience.¹⁾ In his famous book *The Design of Everyday Things* (1998), American cognitive psychologist Donald A. Norman argued for the primacy of function over other considerations. In contrast, in his sequel, *Emotional Design: Why We Love (or Hate) Everyday Things*, Norman asserts that the emotional aspects of design may be more critical to a product's success than the practical elements of the product.²⁾ It has been a design trend for designers to pay attention to emotional experience and to design emotionally from people's emotional needs.³⁾ In today's

industrialized production environment, the return of humanization is the essence of emotional design. At present, the homogenization of preschool teachers' uniform in the market is more serious, and it is difficult to achieve a breakthrough in the basic form of fabrics. Until now, China's uniform design industry has not had a complete academic system, and systematic academic research on preschool teachers' uniform has been very limited, and the reference that kindergartens can get when choosing teachers' uniform is even more limited. Incorporating emotional design into the design of preschool teachers' uniform is a direction that is in keeping with the times. This paper reviews the current theoretical development of user experience, emotional design and uniform design through literature research method, and determines the theoretical research basis of this paper. Through the comparative research method, the current situation of kindergarten uniforms in the market was compared and analyzed. On this basis, qualitative research method was applied to summarize the user experience of preschool teachers using questionnaires and comprehensive interviews, and based on user experience, emotional design strategies were extracted from the user's emotional experience psychology, operation logic and emotional experience environment to find

- 1) Pan Zhongjun, Yan Li, Problems in the study of sense of control from a conceptual definition perspective, *Social Psychology*, 2008, 100(6):29-30.
- 2) Donald A. Norman, *The Design of Everyday Things*, New York: Basics Books, 1988.
- 3) Gao Xiaowen, Hu Weifeng, Research on mobile application dynamic effect design based on emotional experience, *Design*, 2022,35(04):100-102.

design directions for preschool teachers' work uniforms. Using user experience design theory to analyze users, understand user workflow, clarify user needs, and use the three Layers of emotional design theory as a guide, try to integrate emotional factors into the design of preschool teachers' uniform in order to meet the dual needs of users for material and spiritual, namely the Visceral, behavioral and reflective Layer. According to this, an application model of emotional design method for uniforms will be obtained, and this method model can provide new ideas and development direction for uniform design, help uniforms for specific groups of people to occupy an advantageous position in the market competition, and provide reference for uniform design and selection.

2. Theoretical Research

2-1. User Experience

The concept of experience was put into practice in the field of design by the American cognitive psychologist Donald Arthur Norman (2004), who introduced the concept of affective design in his book "*Design Psychology*". The research and practice of the concept of experience has been carried out in depth ever since.⁴⁾ According to DANIEL (2000), the goal of user experience is to continuously achieve four stages: useful, easy to use, good to use, and love to use.⁵⁾ Hassenzahl and Tractinsky (2006) state that user experience is the result of the user's internal state (expectations, needs, motivations, etc.), the characteristics of the system (use, usability, functionality, etc.), and the context in which the interaction occurs.⁶⁾ The

4) Donald A. Norman, *Emotional Design*, Ubiquity, 2004, p.45.

5) DANIEL L., *Understanding User Experience*, Web Techniques, 2000, 5(8):42-43.

6) Hassenzahl, M., & Tractinsky, N., *User experience- a research agenda*, Behaviour &

International Organization for Standardization (ISO) defines user experience as the perceptions and reactions obtained by users using or expecting to use a system, product, or service (ISO 9241-210, 2019). This definition focuses on the user's perception, and some researchers have given a better operational definition in relation to the product and the context of use.⁷⁾ And emotional experience refers to the subjective feelings of individuals. It contains inner emotions and personal experiences (Desmet, Hekkert, 2007).⁸⁾ It emphasizes the unity of emotional content and experiential process. Generally speaking, User Experience (UX or UE) refers to the purely subjective feelings that users build up when using a product, system or service (NetEase User Experience Center, 2015).⁹⁾ In addition to the academia, many major companies in the industry have also given their own definitions of user experience. For example, Microsoft considers all designs involving voice, interface, user interaction, etc. as the scope of user experience.¹⁰⁾

2-2. Emotional Design

The Dictionary of Psychology defines emotion as the experience of a person's attitude toward whether something meets his or her needs. According to the Soviet psychologist П. М. Yakobsson (1997), emotion is a reflection of

Information Technology, 2006, 25 (2), 91- 97.

7) ISO 9241- 210, *Ergonomics of Human- system Interaction : Part 210 : Human- centred Design for Interactive Systems*, International Organization for Standardization (ISO), 2019.

8) Desmet, Hekkert, *Framework of product experience*, *International Journal of Design*, 2007, 1(1) : 13-23.

9) NetEase User Experience Center, *Three reflections on user experience*, *Industrial Design*, 2015, (10): 32-33.

10) Chen, J.Y., Hu, R.X., Sun, H.L., *Research on the effect of using artificial intelligence video production platform from the perspective of user experience*, *Journalism University*, 2021, (12):92-107+124-125.

objective reality, which reflects the real world in a unique way, in the form of subjective attitudes expressed by people towards the things and realities of the world.¹¹⁾ Richard Lazarus and Bernice Lazarus (1994) define "emotion as a complex response that involves both our minds and our bodies", "emotion is a personal drama of life, which relates to the fate of our target in a particular encounter and to our beliefs about ourselves and the world we live in. It is caused by an assessment of the personal meaning or significance of what happened in that encounter."¹²⁾ Donald Arthur Norman believes that in addition to functionality and practicality, products should also have the ability to make people feel happy. Well-designed products make people feel good. Postrel (2004) similarly argues that the "look and feel" of people, places and things is more important than we think.¹³⁾ There are three well-known international theories on affective design, namely Professor Desmet's "Non-Verbal Affect Measurement Tool", Professor Kansei's "Engineering Technology Theory", and Professor Donald Norman's "Three Level Theory".¹⁴⁾ As important research methods and paradigms in affective design, three-level theory, perceptual engineering and affective computing have played an important role in the emergence and development of affective design research.¹⁵⁾

11) II. M-Jakobsson, Psychology of emotions, Harbin: Heilongjiang People's Publishing House, 1997.

12) Richard Lazarus & B. N. Lazarus, Passion and Reason, New York: Oxford Univ, Press, 1994, p. 151.

13) Postrel, Virginia, The Substance of Style: How the Rise of Aesthetic Value Is Remaking Commerce, Culture, & Consciousness, New York:HarperCollins, 2004.

14) Huang, Hui-Qin, Xie, Yu-Wei, Research on bamboo lamps based on emotional design, Packaging Engineering, 2019, (20):164-168.

15) Chen YK, Jiang YuHao, He RenKe, Wu XingTing, Analysis of research progress, hotspots and trends of emotional design based on bibliometrics, Packaging Engineering, 2022, 43(06):32-40.

This paper focuses on the use of Donald Norman's Hierarchy of Emotions theory is used for the study.

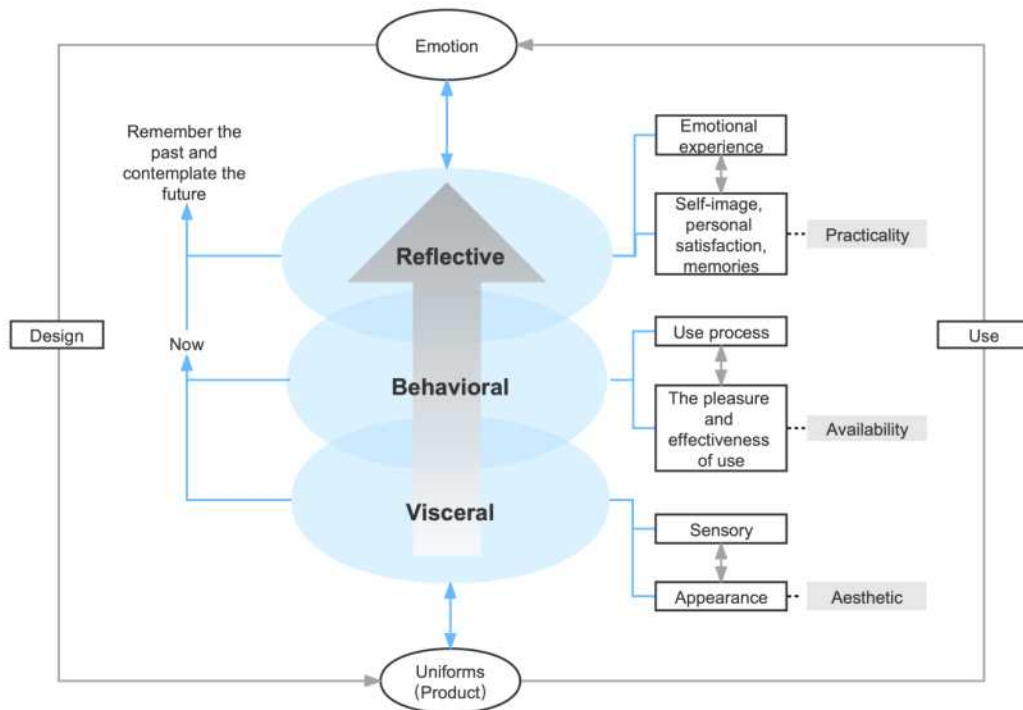
2-3. Emotional Design of Uniform

The origin of Chinese uniform can be traced back to the Zhou Dynasty, and the coronet was worn by ancient kings during major ceremonies.¹⁶⁾ Although uniform originated earlier in China, they developed later. It was not until the 1980s, with the development and growth of Western uniform, that China gradually studied the design of uniform as a separate clothing category, and until now China's uniform design industry still does not have a perfect system and is still at a rapid development stage. The definition of uniform in the dictionary is "a garment made according to a prescribed pattern."¹⁷⁾ Preschool teachers' uniform refers to the clothing that is suitable for preschool teachers to wear in a variety of work situations and teaching activities, which came into being in the context of the new era with the development of quality education for children and the enrichment of classroom life. Well designed and maintained work ware and shoes are promoting health, work ability and work well-being. Uniform can be a suit, jacket and trousers or/an apron. (Rauramo, 2004, 109-110)¹⁸⁾ In today's era of strong pressure, fast-paced work and diversification of living materials, the emotions between people are gradually detached, and "emotions" are especially precious. People begin to cherish and perceive emotional experiences that strike a chord within. (Zou Yushan.Zhang Desheng,2016)¹⁹⁾

16) Shu Sun Tong, ed., The Han Ritual System, Beijing: China Book Bureau, 1985.

17) Shao Yimei, Wang Weiqing, eds, Wearing a professional flamboyance – fashion style and matching of professional dress, Shanghai: China Textile University Press, 1998.

18) Rauramo, P, Työhyvinvoinnin Portaa, Helsinki. Edita, 2004.



[그림 1] Emotional design three-layer structure

Excellent uniform should be full of "human colors", which can make users feel professional identity and physical and mental pleasure, and meet people's emotional needs. Users who have their emotional needs met will have a more positive mindset, which in turn will contribute to the change and development of uniform design for preschool teachers. Therefore, the emotional design of preschool teachers' uniform emphasizes on the feelings of users (i.e. preschool teachers) and focuses on the physical, psychological and emotional needs of teachers, which is a kind of human-centered design. Donald Norman divides human perception into three layers in emotional design, namely the instinctual, behavioral, and reflective layer.²⁰⁾ These three layers correspond to the products that are aesthetically pleasing,

usable, and usable for preschool teachers' uniform. The aesthetics is mainly at the sensory layer, which is mainly reflected in the visual and tactile sensations in the uniform; the behavioral layer relies on the analysis of the functional needs of the user group, and the designer should ensure that the uniform is convenient for teachers to use and helps to improve work efficiency; the reflective layer is the emotion that people project towards the preschool teachers, and the users get the overall perception and evaluation from the uniform, whether the overall presentation of the uniform is consistent with the image of the preschool teachers in their own mind, whether it can evoke the professional identity of the teachers, etc., which affects the teachers' satisfaction and adhesion to the uniform by enhancing their emotional experience. Whether the overall presentation of the uniform is consistent with their own image of preschool teachers, whether it can evoke teachers' professional identity, and so on, influence

19) Zou Yushan, Zhang Desheng, An analysis of clothing emotional design, Art Science and Technology, 2016, 29(01):53-54.

20) Donald A. Norman, Emotional Design, Ubiquity, 2004, p.63.

teachers' satisfaction and adhesion to the uniform by enhancing teachers' emotional experience. These three layers are not independent, but are integrated and mutually reinforcing in the design process, acting and reacting to each other, thus advancing the renewal of preschool teachers' uniform as the needs of the times vary. The interplay of these three design layers leads to the culmination of "emotional design", a new holistic approach to designing preschool teachers' uniform, a set of design methods for uniform that can be continuously updated and iterated.

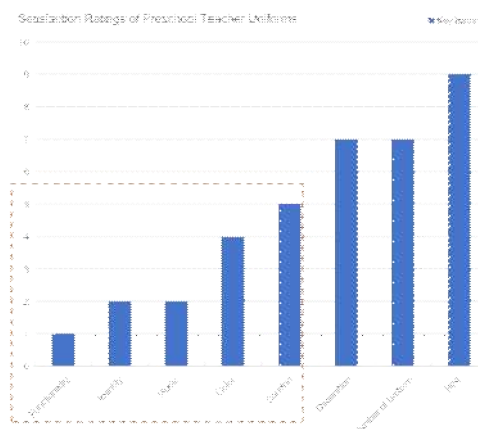
3. A Study and Analysis on the Current Situation of Preschool Teachers' Uniform

3-1. Research Process

In order to understand the various needs of preschool teachers for the existing uniforms, get more in-depth and effective opinions and suggestions, and avoid one-sided and regional differences in research findings, this study adopted a qualitative research method, which combined questionnaires and in-depth interviews to summarize the user experience of preschool teachers. Based on this, the emotional design of uniforms was carried out and a model for the application of emotional design of uniforms was derived.

The questionnaire was designed based on the literature study, a test questionnaire was administered before the formal distribution of the questionnaire, the content of the questionnaire was re-detailed and amended based on the feedback from those who completed it, and the questionnaire was formally distributed. A total of 265 questionnaires were distributed in this study. Using the invalid sample function of SPSSAU, samples with more than 70% of the same answer and samples with less than 60 seconds of answer time were selected as invalid samples and tested, and finally 243

questionnaires were judged to be valid, with an effective rate of 91.7%. The questionnaire used a scoring system to break down the current market demand for preschool teachers' work uniforms into eight segments: functionality, identity, model, color, comfort, decoration, number of uniforms, and size. Participants were asked to rate each board on a scale of 0-10, ranging from "not satisfied at all" to "very satisfied". The total scores were ranked in ascending order, and those aspects with mean scores below the median of 5 were identified as urgent problems, which were further analyzed. A total of 5 aspects were below 5 points, namely: functionality, identity, model, color, and comfort.



[그림 2] Satisfaction Rating of Preschool Teacher Uniforms

Based on the above questionnaire results, five kindergarten educators from different regions with different experience in the field were invited to conduct further in-depth interviews on the above five aspects (Table 1). The two main purposes were to identify the problems in the existing uniform design, i.e., the more detailed and clear needs of the above five aspects, and to map out the user journey by sorting out the work content of preschool teachers in a day. (Figure 3) in order to discover the hidden needs in the use of preschool teachers' uniform.

Through the analysis of questionnaire results and interview content, we understand the user's satisfaction level with existing uniforms, determine the functional scope, and clarify the special needs of the preschool teachers' group for professional clothing. Then, according to the

user journey map, we discover the user pain points, find out the unmet user needs of preschool teachers in different working hours, scenarios and contents, and define the hidden needs of users.

[表 1] Comparative study values of kindergarten uniform modules by location

No.	Position	Region	Years of experience	Views on the demand for uniforms				
				Functionality	Identity	Model	Color	Comfort
1	Retired kindergarten teacher	Qing Hai	30 years	Insufficient storage space; Storage space classification; Winter warmth	Unable to feel a sense of mission as a teacher through the uniform	"Unlike military uniforms that have a uniform design, teachers' uniforms are more selective, and choosing a style that teachers like is more conducive to enhancing teachers' enthusiasm for their work"	"The color should look good and be durable."	With new technological developments, there are more comfortable fabrics available that can be used in uniform design
2	Kindergarten director	Chong Qing	18 years	Insufficient storage space; Storage space classification; Fabric and auxiliary materials to prevent mosquitoes and insects	Uniforms only serve the purpose of uniformity and ease of movement, but they are not chosen with a sense of teacher identity in mind	"Kindergartens can independently select their own uniforms for kindergarten teachers, and allow their teachers to participate in the selection or design of uniforms so that teachers are not excluded from uniforms"	"The current color scheme of kindergarten uniform is very plain."	Would like to see new and more comfortable designs in the uniforms

3	In-service kindergarten teacher	He Nan	3 years	Insufficient storage space; Storage space classification; Fabric and auxiliary materials safety	The choice of sportswear for uniforms was considered to be because of the convenience of sportswear for teaching activities and not related to teacher identity	"It's okay to choose sportswear as a uniform, but sportswear is also available in novel styles, like Nike and Adidas sportswear also look good"	"Consider looking at popular colors to add to the design when the uniform is revolutionized"	"Cotton fabric has a certain elasticity, elasticity is not necessarily wear-resistant, in the work requires wear-resistant and comfortable design"
4	Kindergarten freshman teacher	Gan Su	1 year	Insufficient storage space; Stain resistance; Abrasion resistance	The choice of kindergarten uniforms is considered to follow the trend of choosing sportswear, not because sportswear can make kindergarten teachers feel the identity	"Why does the uniform have to be sportswear, there are many garments that are easy to move and look good"	"Don't like the current color, it looks rustic"	"The current uniforms have some comfort, and I think there are options for more comfortable fabrics or designs"
5	Kindergarten trainee teacher	Si Chuan	6 Months	Insufficient storage space; Stain resistance; Abrasion resistance	"I think that teachers are the same as doctors and police officers in serving the people, but currently there is no uniform like doctors and police officers, so I do not feel the professional mission"	"The style should keep up with the times and meet the modern aesthetics"	"I don't have a specific favorite color, but I think the color scheme of the uniforms is much uglier now than the color scheme of the sports uniforms out there"	"The current uniform is sportswear, and a certain level of comfort"



[그림 5] Hong Kong Aloha Kindergarten, Tongliang, Chongqing, Spring and Autumn Uniform

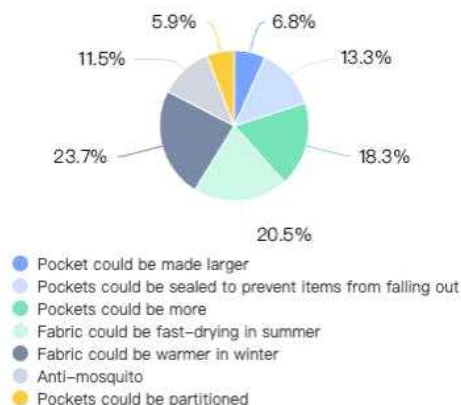


[그림 6] Gui'an Ganhe Aile Kindergarten, Guizhou, spring and autumn uniform

3-2-2. Behavior Layer

In the research, we found that currently kindergartens would prefer to choose sportswear as the uniform for preschool teachers, the purpose of which is because the sportswear is easy to carry out teaching activities. However, apart from the function of being easy to move around, there are other functional needs that designers need to fulfill. The results of the discussion are that the most functional needs of the current users of the existing preschool teachers' uniforms are about storage space: insufficient storage space, difficulty in classifying storage space, and items easily falling out (Figure 7). By further summarizing and outlining the teachers' daily workflow and analyzing the pain

points and opportunity points of each part, the study found that in addition to the above-mentioned explicit needs, there are also hidden needs of users in using uniforms, such as the stain resistance of fabrics, insufficient safety level of fabrics, and scuffing of clothing accessories (Figure 8).
















[그림 7] Gui'an Ganhe Aile Kindergarten, Guizhou, spring and autumn uniform

3-2-3. Reflective Layer

Image is the initial display of a person's comprehensive quality and has a strong function of heart suggestion. It is the outside world's impression and evaluation of us.²²⁾ preschool teachers' uniform is a way for preschool teachers to present themselves to the outside world. Through the uniform preschool teachers are able to gain outside impressions and evaluations. At the same time, uniforms also have a psychological implication on teachers' self-perception and professional identity. From the research, we found that while the current preschool teachers' uniforms are mainly ordinary sportswear, and there is no difference between the sportswear used as uniforms and ordinary sportswear. Teachers believe that they cannot feel the specialness of their identity by wearing

bamboo lamps based on emotional design, Packaging Engineering, 2019, (20):164-168.

22) Chen Kaimei, Professional image shaping of female teachers in higher education, Journal of Jiujiang Vocational and Technical College, 2010, No. 38(02):66-67.

Children's tasks	Morning		Arrival at the kindergarten	Teaching activities + outdoor activities	Breakfast	Lunch	Lunch Break	Special cases
	Afternoon		Dismissal of children		Dinner			
User Process				 				
User Thinking	Change of clothes can be faster, do not be too troublesome to put on and take off, do not get dirty my clothes cleaning		Be well-groomed in front of parents and have clean clothes	Be careful not to move in a while the clothes bounced bad, winter outdoor a little cold, a lot of mosquitoes in the summer!	Oil spilled on clothes, hope it is not found	This work clothes must be convenient for me to clean up the bed	Don't get water on me. Where are the tissues in my pocket?	
User Feeling								
Pain Points	Haircut is messed up when changing to uniform, inconvenient to put on and take off		Make parents feel that the user looks very spiritual	Elasticity is not enough to facilitate activities, easy to dirty, not enough functionality, summer outdoor mosquitoes, summer sweating, winter outdoor cold	Fabric is not resistant to stains, food oil and water rubbed on clothes	Not flexible enough for teachers to lift their hands	Water easily wet uniforms; not functional enough to pull out items in time, such as tissues	
Opportunity Points	Easy to put on and take off		Color and style look good and neat, reflecting the spirit of teachers	Choose fabrics that are elastic, dirt-resistant and easy to clean; summer fabrics that are mosquito-proof and quick-drying; winter fabrics that resist the cold; functional design partitions	Choose stain-resistant, easy-to-clean fabrics; functional design, teachers can always take out paper towels, candy, etc. to help children eat	The fabric is elastic enough	Waterproof, easy to clean; functional design: take out wet wipes, handkerchiefs, etc. in time	

[그림 8] Analysis chart of preschool teachers' uniform pain points and opportunity points

uniforms, thus it is difficult to obtain the pride of teaching profession and their own sense of value from the external evaluation of uniforms.

Aesthetic differences lead to different perceptions of beauty by users, the details of which can be obtained by summarizing and summarizing user needs. Teachers' needs for appearance, needs for functionality, and needs

3-3. Results

[표 2] Summary of the issue analysis of existing uniforms for kindergarten teachers

Three layers of emotional design	Visceral layer	Behavioral layer	Reflective layer
Representation	Color matching can't meet teachers' preference ; The style design is similar ; Respondents think the choice of uniform style is not fashionable enough	Insufficient storage space ; Storage space is not classified ; Fabric stain resistance ; Fabric and accessories safety issues	Preschool teachers want them to be seen by others as dynamic Preschool teachers want others to think of them as teachers and not babysitters with children
Reason	Appearance can not meet the user's sensory needs	Functionality does not meet the user's use, the existing functions are not enough to assist the user when working	The sports uniforms used as uniforms are indistinguishable from ordinary sports uniforms and do not allow teachers to feel the difference of identity from them
Result	Teachers' needs for appearance, functionality, and identity correspond to the three layers of emotional design: the visceral layer, the behavioral layer, and the reflective layer, and in summary, teachers' needs are actually because their emotional needs are not being met		

for identity correspond to the three levels of emotional design: perception level, use level, and reflection level (Table 2). In summary the teachers' needs are actually because the teachers' emotional needs are not being met. According to the user's emotional needs, the use of introducing emotional design into the design method of uniforms and finding the specific methodological process of emotional design of uniforms can realize the value-added experience of users, and the methodological model of emotional design of uniforms can provide theoretical support for the subsequent design of uniforms.

4. Emotional Design Key Countermeasures for Preschool Teachers' Uniform

4-1. Visceral Layer of Emotional Design for Uniform

This layer focuses on addressing the user satisfaction of preschool teachers' uniform in terms of appearance. The most intuitive visual senses in clothing are color and style, which can make preschool teachers as users instinctively project their likes and dislikes of the uniform. Sensory is mainly visceral layer, human beings rely on visual, auditory, tactile, smell and other sense organs to judge the emotional embodiment of product design: the beautiful and smooth shape of the product, bright and saturated harmonious colors, pleasant sound during operation, comfortable material texture can make people happy emotions and thus generate positive emotions; on the contrary, the poor shape, miscellaneous and confusing colors, buzzing and harsh sound can lead to negativity and anxiety and thus negative emotions.²³⁾

Color: Each color has its own characteristics, and the color emotion between people varies

because of their personal experience and knowledge reserve. When designers are color matching, even if the same color is different in the garment because of the color ratio, color position and color matching method, it will cause different psychological feelings. Therefore, as designers need to find out the influence of color emotion and analyze it, use it according to the emotion of color, and think about choosing the color that can cause the user's emotional resonance. For example, if a fat person wears dark clothing, he or she will look slimmer, while a thin person wearing bright clothing will have a fuller figure. Warm colors with a forward-looking nature also have a feeling of expansion. Conversely, cold colors that have a receding nature have the feeling of contraction. That is to say, warm colors and brightness of large colors feel large; cold colors and dark colors look and feel small.²⁴⁾ Then again, blue is a symbol of infinity, eternity, truth, devotion, loyalty, purity, chastity, peace, wisdom and spiritual life happiness, hope, serenity, purity, sanity and profundity. Blue is also a symbol of melancholy and sadness, and the modern field of scientific and technological exploration takes blue as the symbolic color.²⁵⁾

Model: The shape of the garment presented by the model is the primary factor that stimulates the user's instinctive emotions. From the human use of bark knotted grass skirt to ward off the cold, cover the shame, to the gold wool jade clothes represent the status of the noble, clothing models are sometimes simple and sometimes complex, in a variety of changes and always based on human emotions, in order to meet the human emotional needs and constantly practice, refining, summarizing and creating. The wearing of clothing can reflect the user's state of life and aesthetic interests, and the user's invisible emotional factors can be transformed

23) Gao Xiaowen, Hu Weifeng, Research on mobile application dynamic effect design based on emotional experience, Design, 2022, 35(04):100-102.

24) Gombrich, Sense of Order, Zhejiang Photo Press, 1987.

25) James Holmes, Accessible Design, Dalian University of Technology Press, 2002

into explicit factors through the external expression of clothing, namely model. In terms of silhouette, X-shaped clothing feels feminine and elegant, H-shaped clothing feels neutral, and O-shaped reflects lively. ²⁶⁾ Kindergarten teachers are also unsuitable for uniforms with a close shape because of the large amount of activity and movement required at work.

4-2. User Behavior and Behavioral Layer of Emotional Design

This layer of design is about use: function, understandability, usability.²⁷⁾ The focus is on addressing the current functional shortage of kindergarten teachers' uniform. According to the previous analysis of the user journey map in the highest user call about the need for storage: this makes the designer to consider the design of increasing the number of pockets in the design of workwear, and the number and position of increasing the number of pockets can be referred to the design of workers' uniform, but it should be noted that for each design of increasing a pocket, the size and position of the pocket will have an impact on the style and silhouette of the product, and the silhouette will also affect the teacher satisfaction with the uniform. Teachers can be organized according to their personal situation and set up a regional classification of pockets, because of the difference in personal habits, some teachers like to put their hands in their trouser pockets, while others like to put their hands in their coat pockets. At the same time, the design should pay attention to how it can prevent the items in the pocket from falling out. Thus, the purpose of assisting teaching activities to improve efficiency. However, teachers need to change between their own clothes and work clothes

every day, so the design needs to save time to facilitate teachers to change. In places where there are hard accessories such as zippers and buttons need to consider covering, used to isolate hard objects from direct contact with children caused by injury, to play a role in the protection of young children. Injuries to children can also cause unnecessary problems for teachers, increase their workload, and increase negative emotions at work, making them less productive and decreasing their self-satisfaction. Overall there are very few cases of injuries due to clothing, but this does not mean that designers can ignore the safety factors of clothing, such as the safety level of the fabric, the sharpness of the accessories, the softness of the decoration, etc. The accessories and decorations on the front chest of the top and other eye-catching parts of the visceral layer will also have an impact. Over 95% of preschool teachers worldwide are women, as noted by Bernhagen (2014)²⁸⁾ and Education Statistics (2011). Because female teachers are more concerned about their image, they also want the model of their clothes to flatter their figure. Cotton fabric is undoubtedly the most cost-effective fabric, good elasticity, wear resistance, cheap, the shape of the garment is quite broad, and easy to clean after dirty. If it is an economical kindergarten can choose antibacterial, stain-resistant, or even self-cleaning fabrics on this model. In summer, kindergartens with sufficient economy can choose fast-drying sportswear fabrics. In summer, when the climate is generally high throughout China, clothing can quickly absorb sweat from teachers' bodies and dry quickly if they are engaged in outdoor activities. In winter, especially in high latitude areas, the function of keeping warm is very important. The comfort of clothing can enhance teachers' motivation to be outdoors, rather than reducing the desire to do so because the

26) Chen Weiwei, Principles and applications of perceptual matching-based collaborative design for apparel, Soochow University, 2018.

27) Donald A. Norman, Emotional Design, Ubiquity, 2004, p70.

28) Bernhagen, Lauren. (2014). What is so weird about a male preschool teacher Addressing the stereotypes. URL: <https://www.rasmussen.edu>.

weather is too hot or too cold. The functionality of the fabric will inevitably affect the feel of the fabric, e.g. fabrics that are hard-wearing are usually less soft.

4-3. Reflective Layer of Emotional Design for Uniform

The reflective layer focuses on addressing preschool teachers' search for identity in their current uniform. Whether the overall presentation of the uniform is consistent with the image of preschool teachers in their minds, whether it can evoke teachers' professional identity, etc., affects teachers' satisfaction and adhesion to the uniform by enhancing teachers' emotional experience. The reflective layer covers many areas, involving culture, society, information, products, uses, etc. It is the result of a combination of visual design, functional attributes, interaction methods and other factors. When users think of a product, they reflect on its full appeal and experience of use.

Emotional Memory: When a user uses a product it inevitably leaves an impression on the product. Whenever the product is involved again, users develop a distinct sense of preferences and strengths and weaknesses. However, it is clear that the current preschool teachers are of the opinion that their uniforms have obvious drawbacks. Work is inherently exhausting, and it is important for designers to think about designing products that can offset the exhaustion of work as much as possible with customer satisfaction, or even make users feel that work is not a difficult task, and ease their anxiety at work.

Resonance: The image of preschool teachers should be dignified, generous, positive and lively, but in the current preschool teachers' uniform, except for the sportswear which makes them experience the feeling of vitality, preschool teachers do not feel other emotions from it and do not get the pride of teaching and raising

people. More colorful, sunny and happy visual feelings, which can better catch the users' eyes and give them a sensory pleasure, as well as being more in line with the professional image of preschool teachers in teachers' minds. In addition to this, preschool teachers are also perceived to be gentle, so soft fabrics, such as knitted fabrics, give the impression of softness and gentleness, matching the preschool teachers' perception of their professional self-image.

Cultural Connotation: Preschool teachers educate the future of a nation, and each nation has its own history and culture. Incorporating traditional cultural features and excellent qualities into the function and design can make preschool teachers become advocates of traditional culture and take the initiative to take responsibility for passing on excellent history and culture, can enhance teachers' sense of cultural involvement, and can increase teachers' sense of personal belonging and respect. For example, the integration of traditional Chinese costume, cheongsam, and panto into the design of preschool teachers' uniforms is reflected in a communal style that can resonate with the emotions of the Chinese nation. By exploring the cultural significance of history and applying its spiritual connotation to the design of preschool teachers' uniforms, the reflective layer of design is sublimated.

Designers need to design products that are satisfying and enjoyable for users, which is not easy for designers to design with the matching of product and user emotions in mind. Each layer has its own meaning, and an excellent uniform product is the result of the culmination of these three layers of emotional design working together, so designers need to repeatedly revise and integrate between these three layers to achieve the purpose of user satisfaction with the product.

5. Uniform Emotional Design Method Application Model Summarization

5-1. Research on User Experience

Firstly, clearly identify the users of this designed product, for example, the users of preschool teacher uniform are kindergarten educators. Then study the users and clarify their needs. Secondly, analyze and compare the results and extract key factors for design. For example, when preschool teachers work with young children for a long time while wearing uniforms, the performance and safety of the uniforms in use is an issue that cannot be ignored. However, both the aesthetics of uniforms and the need for function and safety have changed over time and with social and scientific progress. For example, the choice of aesthetics is the aesthetics of the current era, not the aesthetics of the last century; and functionality, the demand for wearing comfort is met followed by new functional needs; safety needs are increased after the emergence of recycled fabrics and the demand for non-toxic and harmless. Therefore, the first step is to first understand the basic situation of the target users, define the positioning of functional requirements, and determine in order to clarify the shortcomings of the existing uniforms so as to find the design direction and arrange the information architecture.

5-2. Three Layers of Emotional Design for Uniform

5-2-1. Visceral Layer

This layer is mainly about the perceived beauty and comfort of the product thus triggering the user's emotional projection. In the clothing is mainly reflected in the visual and tactile perception, visual mainly on the color, model, detail decoration, tactile mainly on the touch of fabrics and accessories. The design of the model should be in line with aesthetics. Fashion designers should conform to the current

aesthetics and values when designing uniforms. For example, preschool teachers' uniforms should be designed in a way that is both aesthetically pleasing and not overly exaggerated. As explained by Oruka (1987), if a teacher enters a preschool classroom with highly embellished wearing, the learners will get glued to what she puts on and may concentrate less on what is taught.²⁹⁾ In the choice of color, according to the psychological and visual feelings brought by the color, as well as the special needs of users to match. In terms of details, designers can try classical traditions and classic shapes to create, both decorative and to spread traditional culture. Icon shapes with fun, entertainment and affinity are more likely to convey emotions to people.

5-2-2. Behavior Layer

This layer of design lies in the design of user experience and functionality: function, understandability, usability. And the design of this layer will also have an impact on the visceral layer, and these two layers influence each other. The thickness of the garment affects the shape of the garment, the way the garment is put on and taken off affects the style of the garment, and the length of the garment affects the storage capacity of the garment. In the case of preschool teachers' uniforms, the basic need is to meet the work clothes that can facilitate the teachers' teaching activities. A further need is to enhance and innovate on the part of functional design that can improve efficiency when conducting teaching and learning activities. The ease of use of uniform functions can reduce the anxiety caused by teachers' bad feelings when using them, which means that designers should consider not only whether the functions of uniforms meet the needs of customers, but also whether these functions are easy to use when designing the uniforms. If the function of the

29) Oruka, Henry Odera, *Practical philosophy: In search of an ethical minimum*, Nairobi: East African Educational Publishers, 1997.

product can meet the user's needs, but can not make the user feel convenient and comfortable in using the product, then this product will eventually be replaced. In terms of touch, users can have a positive psychological projection to a comfortable, soft and flexible fabric, on the contrary, if it is a hard fabric, users will feel extremely uncomfortable, and the next time they see the material, they will have an instinctive resistance to wear such fabrics.

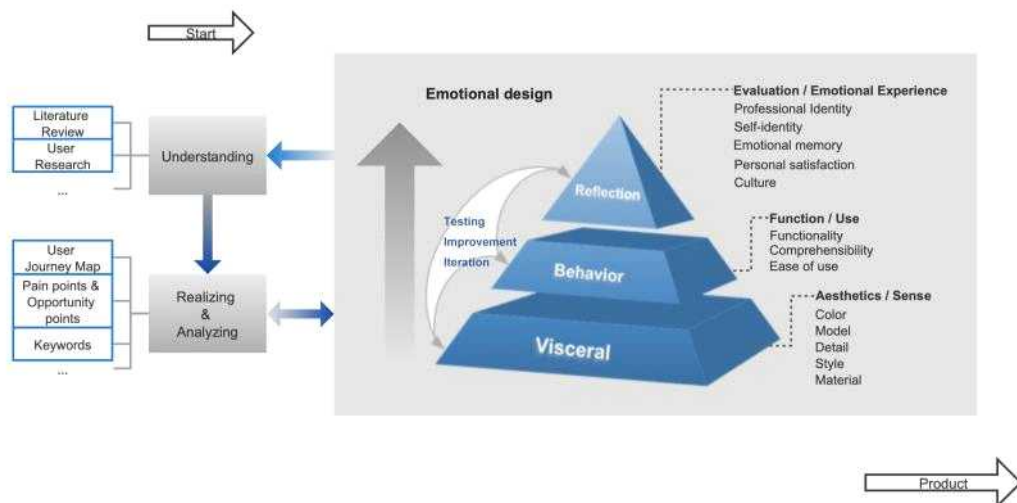
5-2-3. Reflective Layer

Users gain operational and emotional experience from this stage. Professor Donald A. Norman summarizes the reflective layer as: emotional memory of the product, personal satisfaction and culture. The user's experience and memory from this tier will also drive future design back to the first and second layers, not independently. Emotional memory, when the user uses it, inevitably leaves an impression on the product. Whenever the product is involved again, the user will have a distinct feeling of preference and advantages and disadvantages. For example, the color scheme, model, style, and feeling of use can make users feel this way.

Self-personal satisfaction, the user's demand for the product in addition to functionality and comfort, more is due to the user's own image needs, that is, the product shapes the user's image in the eyes of others, the level of professionalism. Finally others know the user through this external image, and the user gains emotional benefits from it. For example, in the design of preschool teachers' uniform, teachers have a gentle and beautiful self-image in mind, they believe they are nurturing the future and hope to gain respect for it. As users of uniforms, preschool teachers can feel valued as angels in their own hearts and as advocates of a culture of excellence. By continually shaping and changing the contained culture, the user's experience of cultural engagement can be enhanced, and it can increase the sense of professional belonging of the faculty. As society evolves, users' needs and aesthetics for design are subject to change, and this layer of emotional response provides an outlet for iterative design renewal.

5-3. Product Testing Improvement and Iteration

Visceral layer, behavior layer, reflective layer
These three layers are not an assembly line



[그림 9] Uniform emotional design method application model

relationship in the process of design, after the reflection of the reflective layer, users may have new requirements for the appearance and function of the product, and the increase of function will affect the appearance, the shape of the appearance will also affect the function, and the projection of emotion on the shape and function can also make users reflect on likes or dislikes. They are mutually influenced and constrained, so designers need to repeatedly push each layer and find the balance point when doing the emotional design of uniform. At the same time, the development of the times will also affect the user demand for uniform, designers need to listen to user needs and feedback in a timely manner, bring the actual needs of customers into the three levels of emotion and find the balance point of the three levels of mutual constraints, so as to achieve product testing, iterative products, update and upgrade.

6. Conclusion and Prospect

With the rapid development of the times, people's demand for emotion is getting stronger and stronger, the functionality of the product can no longer meet people's needs, the spiritual level of demand requires the product needs to integrate emotion. In the past, the uniform design was singularly focused on the uniformity and the function of the product, but ignored the human psychology and emotion. The integration of emotional kinetic design in the uniform design can not only bring a different experience to the preschool teachers, but also enhance the satisfaction of the preschool teachers and the pleasure of using the product, and make the teachers reduce the negative emotion and increase the pleasure of working when using the uniform. Emotionally, it can make teachers take better care of children, and functionally, it can improve teachers' work efficiency, and even move users to evoke a

sense of professional identity and accomplishment for preschool teachers. At the same time there is a lack of systematic theoretical support for the design of uniforms. Therefore the emotional design of preschool teachers' uniform is worth exploring. Uniform design is not set in stone, and different times have different needs. It needs to be designed, experienced, reflected, and constantly reflected and updated. Firstly, through questionnaires and interviews as well as market research to clarify user subjects and user needs, and then through the three levels of emotional design visceral layer, behavior layer and reflective layer corresponding to product perception, functionality and emotional identity respectively. Each tier is interconnected and repeated, while each tier has an impact on the previous one, and the impact on the previous layer leads to the renewal and improvement of the product, resulting in an preschool teacher's uniform that meets the times and has an excellent aesthetic. These three layers are not independent, but are integrated and mutually reinforcing in the design process, acting and reacting to each other, thus advancing the uniforms of preschool teachers to be updated with the different needs of the times. The interplay of these three design layers leads to the culmination of "emotional design," This is a new overall approach to designing uniforms, a set of design methods for uniforms that can be continuously updated and iterated. The emotional design method application model of uniforms is proposed to help designers design uniforms that meet the aesthetic, functional and emotional needs of users, to provide new ideas and development directions for uniform design, to help uniforms for specific groups of people occupy an advantageous position in the market competition, to provide theoretical support for the design practice of uniform products, and to provide new references for the development and innovation of professional wear design.

참고문헌

1. Donald A.Norman, [Emotional Design], Ubiquity, 2013.
2. Donald A.Norman, [The Design of Everyday Things], New York: Basics Books, 1988.
3. Gombrich, [Sense of Order], Zhejiang Photo Press, 1987.
4. James Holmes, [Accessible Design], Dalian University of Technology Press, 2002.
5. Oruka, Henry Odera, [Practical philosophy: In search of an ethical minimum], Nairobi: East African Educational Publishers, 1997.
6. Postrel, Virginia, [The Substance of Style: How the Rise of Aesthetic Value Is Remaking Commerce, Culture, & Consciousness], New York:HarperCollins, 2004.
7. Rauramo, P, [Työhyvinvoinnin Portaa], Helsinki. Edita, 2004.
8. Richard Lazarus & B. N. Lazarus, [Passion and Reason], New York: Oxford Univ. Press, 1994.
9. Shao Yimei, Wang Weiqing, eds., [Wearing a professional flamboyance - fashion style and matching of professional dress], Shanghai: China Textile University Press, 1998.
10. Shu Sun Tong, ed., [The Han Ritual System], Beijing: China Book Bureau, 1985.
11. П. М.Якобссон, [Psychology of emotions], Harbin: Heilongjiang People's Publishing House, 1997.
12. Chen YK, Jiang YuHao, He RenKe, Wu XingTing, Analysis of research progress, hotspots and trends of emotional design based on bibliometrics, Packaging Engineering, 2022, 43(06).
13. Chen Kaimei, Professional image shaping of female teachers in higher education, Journal of Jiujiang Vocational and Technical College, 2010, 38(02).
14. DANIEL L., Understanding User Experience, Web Techniques, 2000, 5(8).
15. Desmet, Hekkert, Framework of product experience, International Journal of Design, 2007, 1(1).
16. Gao Xiaowen,Hu Weifeng, Research on mobile application dynamic effect design based on emotional experience, Design, 2022, 35(04).
17. Hassenzahl, M., & Tractinsky, User experience- a research agenda, Behaviour & Information Technology, 2006, 25(2).
18. Huang, Hui-Qin, Xie, Yu-Wei, Research on bamboo lamps based on emotional design, Packaging Engineering, 2019, (20).
19. NetEase User Experience Center, Three reflections on user experience, Industrial Design, 2015, (10).
20. Pan Zhongjun, Yan Li, Problems in the study of sense of control from a conceptual definition perspective, Social Psychology, 2008, 100(6).
21. Zou Yushan,Zhang Desheng, An analysis of clothing emotional design, Art Science and Technology, 2019, 29(01).
22. Chen, J.Y., Hu, R.X., Sun, H.L., 'Research on the effect of using artificial intelligence video production platform from the perspective of user experience', Journalism University, 2021.
23. Chen Weiwei, Principles and applications of perceptual matching-based collaborative design for apparel, Soochow University, 2018.
24. ISO 9241- 210, Ergonomics of Human-system Interaction : Part 210 : Human-centred Design for Interactive Systems, International Organization for Standardization (ISO), 2019.
25. www.rasmussen.edu.