



# Interaction Design Research Based on the Concept of Sustainable Innovation

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**Abstract.** Interaction design with food as the creative medium, from the perspective of “re-design”, explores more possibilities of food and food, food and human beings, food and sustainable innovation and development. This paper discusses the design of food interaction based on food experience, introduces the definition of food design and eating experience and the research scope, and proposes the definition of food interaction design based on eating experience. Through the analysis of peoples food needs and the theory related to experience design, the experience hierarchy relationship of food experience: cognition-behavior-emotion is analyzed, so as to derive the three principles of food interaction design based on food experience: sensory integration principle, behavioral interaction principle, and emotional experience principle.

**Keywords:** Sustainable · Interaction Design · Healthy Eating

## 1 Introduction

Interaction design based on the concept of sustainable innovation, integrating traditional Chinese food culture, multidimensional perspective covers multidisciplinary field knowledge content, including psychology, aesthetics, design and other categories of comprehensive design [1, 2]. Design analysis using food as the medium, starting from the national conditions of Chinese food design, exploring the design innovation of the traditional Chinese concept of sustainable interaction in many fields, and “redesigning” the design language from the perspective of sustainable culture.

## 2 The Interactive Design of Healthy Eating is Associated with Chinese Culture

Based on the development of food in the early farming period, people mainly lived in the countryside, and then the basic dietary needs were the collection and processing of food. With the rapid development of technology, the way of life has also undergone great innovation, the field of diet has entered the stage of industrial society, and the output of food culture has changed from the previous grains to the current fine grains. The development of the information society has brought more food knowledge to the

convergence, and the public is looking forward to the feedback of food to the body while satisfying the pursuit of food. At the same time, the improvement of food cooking technology is inseparable from the designer's attention to cooking products.

### **2.1 Interactive Culture Runs Through the Perception of Food Concepts**

The cultural context of each food is linked to the relevant human history. The perceptual connotation of the origin of food comes from people's internal needs, and the front of the needs is people's inner desires. Tracing back to the source, food from different cultural backgrounds, according to their unique cooking methods and eating methods, can find an exclusive background of humanistic knowledge.

In the process of industrialization, the change of lifestyle has changed the relationship between people and food. Mass food culture does not only stay in the stage of food, but also improves the pursuit according to the changes in the quality of life, and the changes in diet are based on the maintenance of global peace and carry out multi-angle policy integration [3].

### **2.2 Taste Experience Shapes Multi-sensory Interactions**

In the development trajectory of human material civilization, the related attributes of food have undergone qualitative leaps, and food has taken different states in the process of different forms of cooking, shaping a new form of art [4]. The sensory experience of taste includes people's love for food, most people will have painful experiences in the face of disliked food or smelly food, and happy emotions about sweets and favorite foods will be presented. The emotions of the taste response will be transmitted to the cerebral cortex, and the public's visual senses will feedback through the taste bud experience, so the visual experience of taste is a process, and our human cerebral cortex completes the judgment of color, shape, and size through vision and then forms a taste conjecture experience of food. Hearing also affects the taste experience in different environments, and people who like to listen to music are tasting the same food with the ups and downs of the music, and the final result of the experience is different. Taste experience is a collection of perception system performance, in the field of scientific perception, taste perception experience expression is diverse.

## **3 The Interactive Design Principles of the Concept of Healthy Eating**

Based on the interaction design of healthy eating, users urgently need intuitive and concise interface interaction style and service system functions. The interaction design of the product should be comfortable, natural and clear and easy to operate [5]. And the interaction design that meets the user's psychological expectations will bring real products and services to the user. The design of food interactions is innovated according to the food medium, and "redesigned" in multiple areas of design. The food design of different characters based on the environment is an all-encompassing state. Farmers in the farming period carry out agricultural and animal husbandry breeding according to

the weather and soil, and carefully “design” food; cooks complete the transformation of ingredients according to the changes in the humidity and temperature of food in diversified kitchen utensils; scientists analyze and feedback the absorption of food in the public body from their own academic perspective; psychologists go deep into people’s hearts to study the cognition and memory form of food; philosophers explore the history of food and its existence value Through the immersive interaction principle, users not only get nutritional matching related suggestions in the entire healthy eating software, but also gain more knowledge and fun, and the designer’s perspective completes the design behavior from the perspective of cultural output, connotation presentation, and character needs.

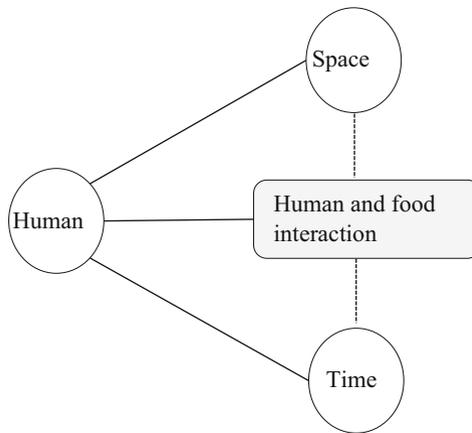
### **3.1 Intuitive Interactive Process - The Regression Design of the Diet**

Through the intuitive interaction process to reduce people’s cognitive resistance to achieve the goal, so that users understand and experience, through the connection between behavior and interaction, deepen the understanding of reasonable meals, resulting in a pleasant experience of the interactive process [6]. In the consumer market, food is carefully cultivated and cultivated by humans, and cooking and eating are cyclical processes in the food system. The design journey map of food is produced according to changes in time and space, and the early food originated from the local territory, and with the economic globalization, people can obtain food from exotic places, forming a diversification of food. Early foods showed more of their natural state, and as food processing techniques developed, there was a gradual shift towards industrial food inherent in the material.

### **3.2 Interaction Design of Emotional Elements: Exploring the Sustainable Development of Food Culture**

When users cannot feel the joy of the product or interactive process, they can no longer use interactive systems that promote healthy diets. Because eating health is a comprehensive concept that encompasses not only physical health issues, but also mental health. Designs that value emotion require more anthropomorphic elements to be used in product interactions.

The national context of rational diet design Chinese localization and economic globalization are maintained and circulated, the rural culture of the agrarian society stage urges the urban development of the industrial society to move forward and gradually guides the growth of the information society, and the food design with material production as the core and the food design with non-material services as the core begins to be occupied and shared. At a time when multimedia is booming, the inheritance of food culture is being diversified. “Taste China, Taste Life” On the tip of the tongue, the Chinese column, the way of careful work, the promotion of food culture, the taste of China spread throughout the north and south of the river. The design of food is redesigned from the material, presenting innovation with subversive forms, and the new situation of the new midpoint is also born, the reorganization of categories, the performance of cultural symbols, the reconstruction of menu presentation, the development of smart



**Fig. 1.** Structure diagram of human interaction with food.

factories under the guidance of the Internet economy of the industrialization revolution, the customization of sketches, and the output of cultural brands (Fig. 1).

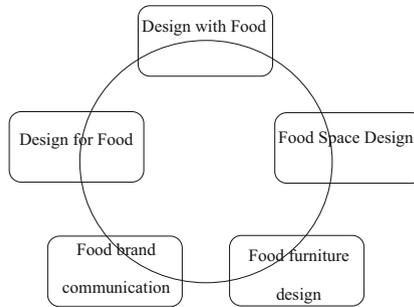
## 4 The Content of the Interactive Design of the Concept of Healthy Eating

### 4.1 New Way to Build a New Experience of Cooking and a New Way of Designing Art

The interaction between ingredients comes from the texture of the material itself, the collision between different ingredients can stimulate the physical and chemical reaction of the ingredients, and the changes in the structure of the materials will affect the expression and taste of the ingredients. The perspective of the designer focuses on the innovation of new materials, new methods, and new themes. Effective interaction in the dining process can lead to more R&D information interaction and technological transformation. “Practice makes true knowledge”, designers focus on practical research, material test records for data analysis, and better sort out food design themes. The process of making the process of performance and experience service design runs through the designer’s entire design thinking.

### 4.2 Balanced Dietary Relationship Explores New Ideas for Future Design

A healthy diet can improve the body’s functioning, but sometimes users can improve negative emotions by eating foods that are high in calories, salt, and calories. Happiness and healthy diet usually need dynamic balance, and in the design of the house, daily life can see a lot of materials, after practical analysis, the ancient wisdom of ingredients will trigger a lot of new design thinking, around the material characteristics of physical research, in the form of fibers to change, get new materials, deconstruction, reengineering to complete the new process of understanding. Follow the principle of moderate balance



**Fig. 2.** Diet system design

to regulate the relationship. The interaction system can provide interaction with family and friends, with social functions. Interactive system products can be based on precise needs to complete the temperature, dosage, time and other aspects of the demand to meet, by ensuring the best food cooking time and taste, so that users can enjoy quality service.

### 4.3 Interaction Design Innovation Brings a New Model of Experience

Users according to the recent exercise mileage, weight changes, heart rate and recent diet-related data presented on the bracelet, measuring instrument or scale, the interactive system will be based on data analysis for different users of the exclusive customized information feedback, different people's physical conditions need trace elements are different, users can automatically enter the disease, the interactive system will avoid risks, provide suitable healthy diet collocation, the interface display will be color and position reminder, not recommended ingredients to give corresponding tips, Respect the emotional needs of multiple users [7].

Taking food research as the object, the experience of diners as the goal of analysis, different social occasions to complete the design of multiple fields, food advertising design around the food information, emotional communication, health and wellness, marketing to promote. The subsidiary form of social networking is related to food culture, and more interactive performances and pop-up activities have appeared corresponding material experience stores and multi-faceted food experience stations. The center of food design is based on the value of interaction between food and people, reflecting the life scenes of the new era (Fig. 2).

## 5 Conclusion

The interactive design research of information products based on the concept of healthy eating highlights the intuitive interaction process between information products and users, the interaction design that pays attention to emotion, etc., facilitates the analysis of food ingredients and reasonable proportions, reasonable dietary suggestions, accurately controls the food cooking process, etc., and further verifies the interface interaction

design of healthy eating concepts through practical cases, and is committed to exploring more experiential information products. Looking forward to future design forms, interdisciplinary integration, cooperation in different learning directions. Study the changes in humidity and temperature of food in the form of a project. For energy conversion from a scientific point of view, technical guidance brought by different majors is an important design link, for example, students in the Food College can bring about the discussion of food health factors. Technologically designed modules with interdisciplinary collaborations to make breakthrough innovations, while also being filled with unknown challenges.

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