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Author	李, 悉萌(Li, Ximeng) 大川, 恵子(Okawa, Keiko)
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Master's Thesis
Academic Year 2020

PUKU: A Service to Share Family Ambience by
Evoking Their Cooking Memories



Keio University
Graduate School of Media Design

Ximeng Li

A Master's Thesis
submitted to Keio University Graduate School of Media Design
in partial fulfillment of the requirements for the degree of
Master of Media Design

Ximeng Li

Master's Thesis Advisory Committee:

Professor Keiko Okawa	(Main Research Supervisor)
Professor Masa Inakage	(Sub Research Supervisor)

Master's Thesis Review Committee:

Professor Keiko Okawa	(Chair)
Professor Masa Inakage	(Co-Reviewer)
Professor Kai Kunze	(Co-Reviewer)

Abstract of Master's Thesis of Academic Year 2020

PUKU: A Service to Share Family Ambience by Evoking Their Cooking Memories

Category: Design

Summary

PUKU is an interactive lighting and audio home decoration device to create a comfort living space at home for international students who suffered from nostalgia. It contains different level of lighting to create warm, cozy comfort atmosphere. Beyond that, It aims to sharing cooking experience remotely by providing cooking sounds and colourful light created by other family members to evoke same mood and feelings.

The number of international students in China and overseas has been increasing ever since the reform and opening-up policy was established. However, language differences, stereotypes, various culinary traditions and living habits, became barriers in the process of intercultural communication for oversea students, which also leads to insecurity, loneliness and nostalgia. In Chinese culture, Home cooking experience is usually related to certain traditional festivals as a symbol of family reunion. Meanwhile, Home cooking experiences includes many sounds that may trigger ASMR to certain people, which help people feel accompanied and stimulate deep relaxation.

The result of the research showed that PUKU has contributed to sharing cooking experiences, preserving family recipes, and reducing loneliness of oversea students. Users feel relaxed and comfort immersing in the virtual environment of being accompanied by others, created by the lighting and audio effect. Additionally, it also help improve family intimacy with their family in real life by reminding them of the valuable moments they shared with their family.

Keywords:

International Students, Home Decoration Device, Lighting and Audio Device Design, Culinary Traditions, Family Recipe

Keio University Graduate School of Media Design

Ximeng Li

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Chapter 1

Introduction

1.1. Background

The number of people living alone has increased from 153 million in 1996 to 202 million in 2006 in total globally, an increase of 33 percent in 10 years. China, India, and Brazil have become the fastest growing countries of solitary. Statistics show that China currently has more than 58 million people living alone, accounting for 14 percent of the country's total households. In Northern Europe, Sweden, Norway, Finland and Denmark, 40 percent to 45 percent of households are solitary, while in Japan, 32.5 percent of total households are solitary. The total population of South Korea is 51.7 million, 5.203 million of them are solitary. In the United States, there is almost 1 solitary among 7 individuals. [1]

According to China's sixth census, there are more than 58 million people living in China today. The number of solitary is equivalent to 14 percent of the total number of households in the country, and the number continues to rise. In 2010, the proportion of solitary elders and elderly couples living alone has approached half of the overall population, which is a significant change from the situation 2 decades ago when 70 percent of the elderly living with their children. [2]

Population migration, cross-city work, reduction of multi-generational families, and urbanization have all contributed to rising of solitary. The growing number of solitary also happens in younger generation in China. The data from census shows that there are over 20 million solitary between the ages of 20 and 39. Meanwhile, among the population who are under 30 years old in China, the higher education they get and the better income they have, the more likely they tend to choose to live alone. One-fifth of families in Beijing are solitary. The average age of marriage in large cities such as Shanghai and Guangzhou is rising. the increasing of divorce rate also leads to the trend of living alone instead of living with others. [2]

Meanwhile, with the developing of globalization, various countries have gradually promoted economic and cultural exchanges. With the unfolding of this process, more and more people began to live abroad alone away from their families. They either chose to immigrate because they liked or yearned for life in other countries, or they chose to study abroad as an international students to improve their abilities, or they were passively sent to work overseas due to their work. Unfamiliar languages, different cultural backgrounds and lifestyles all make it difficult to communicate and socialize with the locals. Being alone and away from family members also add to individual loneliness which can easily develop into other psychological issues.

1.2. Concept of PUKU

This paper, based on the related work and research results, provide suggestions to the current social problem caused by the development of globalization and individualism- the loneliness of solitary international students. PUKU, an ambience creating interactive lighting audio home decoration device can make solitary international students feel accompanied and less lonely.

To achieve this goal, the device interact with a recipe sharing app used within family members. It has both lighting and audio functions to create a entertaining and accompanied living space for Solitary. The audio materials reproduces their family cooking process which they are very familiar with that can remind them of the pleasant cooking experiences with their family members. The colorful light help them understand and share same feeling with other family members.during each cooking procedure.

1.3. Expectation of This Research

The major reason of initiating this project is to help international students to reduce individual loneliness and heal nostalgia, by helping them realize their culture identity, provide intimate companion from family members when they are alone.

With the development of modern society and globalization, the number of Solitary remains growing. In this project, color psychology and ASMR phenomenon

triggered by certain sound will be applied into interior design to create a comfortable relaxing individual living space for solitary international students through reproducing their family cooking sound. This device is not only aims at improving individual living space, but also is designed to help international students rebuild self-identity, cure nostalgia and deepen their intimacy with family members remotely.

1.4. Contribution

The research contributes to several aspects as follow:

1. It provides a new method to sharing family cooking experiences within family members living remotely by an ambience that can evoke family cooking experiences, as well as preserving family recipes.
2. It examines a new way to conduct user test through observations based on video material and interview online due to the restrictions of face to face user test due to COVID-19.

1.5. Thesis Structure

The contents of each chapter as follows:

Chapter 2: Literature Review section, which aims to gather a pool of knowledge about the current research of Chinese culinary tradition, individualism in 21st century, intercultural communication and related work of ASMR.

Chapter 3: The Design chapter describes the modification process of design concept and prototypes. The first prototype is an internal family recipe sharing app designed for family with Chinese oversea students. The second prototype is a lighting and audio home decoration device which aims to share cooking experience within family members in a more abstract and visual way. The final version is the combination of both, an internal recipe sharing platform with an interactive lighting and audio device aims to sharing cooking experiences within family members who are living remotely in multiple ways.

Chapter 4: The Evaluation chapter describes the process of evaluation on a five people family, including observation record, survey as well as the analysis of

evaluation. The main method of evaluation of this device is by observing and interviewing. The evaluation plan will be described in detail and the specific behaviors of users are noted. The result of evaluation will also be analyzed.

Chapter 5: In this chapter, it summarizes the whole project according to analysis of evaluation. The summarized parts include the whole design process and whether PUKU met the planned expectation. Additionally, the possible future work on PUKU and the possibility of applying it to other countries are described in the end of this chapter.

Chapter 2

Literature Review

2.1. Chinese Food Culture and Culinary Traditions

Food culture refers to the practices, attitudes, and beliefs as well as the networks and institutions surrounding the production, distribution, and consumption of food. In other words, it is the connection, beliefs, and experience we have with food and our food system. It incorporates our cultural heritage and ethnicity, but is not limited to it. [3] Traditional cuisine is passed down from one generation to the next. It also operates as an expression of cultural identity. Immigrants bring the food of their countries with them wherever they go. cooking traditional food is a way of preserving their culture when they move to new places. [4]

2.1.1 Four Elements of Chinese Cooking Traditions

Chinese cuisine is an essential part of Chinese culture. Chinese culinary traditions pay extra attention to cooking time and seasoning. For example, unique dishes are served at every family based on the regional preference and family traditions on Spring festival, which is the largest celebration and reunion of the year. Some dishes requires the joint effort of all family members as a essential part of celebration.

Color, shape, flavor and taste are four essential elements in Chinese culinary culture. Special cooking techniques make Chinese cooking experiences different from other countries. [5]

Color is one of the most important element to create an aesthetically appealing dish. Generally, any Chinese main dish has three to five colors, choose from light green, dark green, red, yellow, white, black or caramel-colored ingredients.

In general, meat and vegetables are composed of one main ingredient and there are other two to three secondary ingredients as contrasting colors. Appropriate decoration such as seasoning and sauces are used to improve their quality, so that the chef can present a delicious, aromatic art dish.

Shape mainly depends on the cutting method. According to the requirements of the dishes and the characteristics of fresh food, the raw materials are cut into slices, diced, shredded or minced. Improper cutting makes food unattractive and causes uneven color and taste. When cooking, improper cutting can cause small pieces to be overcooked and large pieces to be eaten raw.

Aroma means the appetizer flavor. At a very early age, the Chinese knew that spices were used to make rich-scented dishes.

Taste refers to tasting food. The Chinese are more concerned about the taste of food than their nutrition. The taste depends on the special seasoning process. There are many flavors-salty, sweet, sour, spicy, fragrant, bitter, etc. Appropriate seasonings are used to make various dishes to suit various appetites. Chinese chefs know how to add and how much to add. At the same time, some new flavors have been created, including "spicy", "fish flavor", and "weird flavor", etc.

In addition to the above-mentioned "color, shape, aroma, and taste", Chinese chefs also pay special attention to the temperature of the fire to make a specific taste. They have known the importance of this since ancient times. It is generally believed that raw food should be cooked on a low heat for a long time after being cut into large pieces. On the other hand, raw food is cut into small pieces and should be cooked on high heat, by frying. Different cooking methods are suitable for different dishes. Sometimes special pots are used. It is sealed before being placed on the fire. Usually, the cooking time will last along time, so the ingredients smell fragrant and eating becomes an exciting experience.

At the same time, there are about 50 cooking methods of Chinese food, including stew, boiled, braised, fried, grilled, smoked, roasted, steamed, boiled etc.

2.1.2 Four Major Traditional Chinese Culinary Genre

Different Chinese provinces has their own culinary traditions based on factors such as availability of resources, climate, geography, history, cooking techniques and lifestyle. Geographic features including mountains, rivers, forests and deserts also

have a strong effect on the local available ingredients, considering that the climate of China varies from tropical in the south to subarctic in the northeast. Chinese chefs have classified eight regional cuisines according to their distinct tastes and local characteristics. The most praised traditional "Four Major Cuisines" are Chuan, Lu, Yue and Huaiyang, representing West, North, South and East China cuisine correspondingly until Qing Dynasty. [6] The modern "Eight Cuisines" of China are Anhui (; Huīcài), Cantonese (; Yuècài), Fujian (; Mǐncài), Hunan (; Xiāngcài), Jiangsu (; Sūcài), Shandong (; Lǔcài), Sichuan (; Chuāncài), and Zhejiang (; Zhècài) cuisines. [7]

Shandong Cuisine

"Lu Cuisine" originated from the Qilu flavor of Shandong. It is the only spontaneous cuisine among the four traditional Chinese cuisines (also the eight major cuisines) compared to Huaiyang, Sichuan, Guangdong and other influential cuisines. It is the most difficult and most skillful cuisine among all. It is famous for its fragrant, fresh and mellow taste. It is very particular about the preparation of clear soup and milk soup. The clear soup is clear and fresh, and the milk soup is white and mellow. Yantai Fushan is the birthplace of Jiaodong cuisine. It is famous for cooking all kinds of seafood and has a light taste. Jinan Licheng is the birthplace of Jinan cuisine. It's good at blasting, roasting, frying, and frying, with a strong taste. [8]

Shandong cuisine is composed of four flavor genres: Qilu, Jiaodong, Confucianism, and medicinal food. It is the most influential palace cuisine in China, and the leading of China's four major cuisines. The formation and development of Lu cuisine is related to the cultural history, geographical environment, economic conditions and customs of Shandong. Shandong is one of the birthplaces of ancient Chinese culture. Located in the lower reaches of the Yellow River with a mild climate, the Jiaodong Peninsula protrudes between the Bohai and the Huanghai. It is full of mountains and rivers, lakes and fertile fields. With the convenient transportation and developed agricultural industry, the grain output here ranks third in the country. Shandong also has a wide variety of vegetables with good quality, and is known as one of the "three major vegetable gardens in the world". [8]

Sichuan Cuisine

Sichuan cuisine is one of China's four major cuisines, originated in Sichuan and Chongqing. It is characterized by peppery, spicy, fresh and fragrant. The appearance of Sichuan cuisine can be traced back to the Qin and Han dynasties. After the pepper was introduced to China for a period of time in the late Ming and early Qing Dynasty, Sichuan cuisine underwent a major innovation and gradually developed into the current Sichuan cuisine. The raw materials are very hard to maintain due to the humid weather there. Therefore making good use of cooking methods such as stir-fry, dry-roasted, soaked and braised is very important. Sichuan Cuisine has many flavor types and is rich in changes, however, spicy flavor is more prominent and well-acknowledged by public. [9]

Sichuan cuisine is the most distinctive cuisine in China. Sichuan cuisine has always enjoyed the reputation of "one dish, one style, one hundred dishes and one flavor". There are more than 38 kinds of Sichuan cuisine in terms of cooking methods, such as stir-fry, fried, dry-cooked, smoked, soaked, stewed, braised, paste, and burst. In terms of taste, it pays particular attention to color, aroma, taste and shape, people who usually have poor appetite are very suitable for eating some Sichuan food because the slightly spicy compound taste helps to promote saliva secretion and increase appetite. [9]

Cantonese Cuisine

Cantonese cuisine, or Cantonese cuisine, originated in Lingnan. It consists of three local flavors, Guangzhou cuisine (also known as Guangfu cuisine), Chaozhou cuisine (also known as Chaoshan cuisine), and Dongjiang cuisine (also known as Hakka cuisine), each of which has its own characteristics. It is a late-start cuisine, but it has a far-reaching influence. Most of the Chinese restaurants in the world are mainly Cantonese cuisine. Therefore, many people think that Cantonese cuisine is a representative cuisine of overseas Chinese. [10]

Cantonese cuisine is characterized by rich and fine selection of materials and light taste. Cantonese cuisine has many optional ingredients, so it is very healthy. Cantonese cuisine pays attention to the seasonality of raw materials. There are old sayings such as - "When spring comes, eat bream. When autumn comes, carp is the best. when is winter, eat anchovy and while winter comes eat bass.

". When they eat vegetables, they tend to pick "seasonal vegetables", such as an old saying goes "cabbage is the sweetest when north wind starts to blow." In addition to selecting the best fat season for raw materials, Cantonese cuisine also pays special attention to selecting the best parts of raw materials. The taste of Cantonese cuisine is "clear, fresh, tender, smooth, refreshing, and fragrant". It pursues the original taste and freshness of raw materials. There are many varieties of Cantonese cuisine, which are sour, sweet, bitter, spicy, salty and fresh. However, only a small amount of ginger and onion and garlic are used, and less spicy spices such as chili in case it is too salty and sweet. This characteristic of pursuing lightness, freshness, and pursuit of taste is affected by the climatic characteristics of Guangdong and the requirements of nutrition. [10]

Jiangsu Cuisine

Jiangsu cuisine is generally referred to as "Su cuisine". It consists of four genres: Nanjing, Xuhai, Huaiyang, and Sunan. It is the second largest cuisine in the ancient China. Nowadays, the national banquet is still dominated by Huaiyang cuisine. [11] Jiangsu cuisine pays attention to the selection of materials, fine knife work, sweet taste, exquisite modeling and distinctive features. Because the climate in Jiangsu and Zhejiang is humid and close to the coast, sugar is often added to the vegetables to remove moisture. Therefore, Jiangsu and Zhejiang cuisines are mainly sweet. The style of Su cuisine originated from Kaifeng in the Song Dynasty, and the Song Dynasty moved southward and gradually occupied the main position. Today's Kaifeng diet still has many similarities with Jiangsu, such as Xiaolongbao, Guiyu, etc. [11]

2.1.3 The development of Chinese family Cuisine

Taste

As early as the Song Dynasty, there were already differences in diets across China. "Meng xi Bi Tan" records: "The southern people prefer salty and the northern people like sweet. " [12]At that time, there were two main flavors in China, the northerners Like to eat sweet, southerners like to eat salty. At that time, Chinese did not eat "spicy" because chili had not yet been introduced to China.

During the Southern Song Dynasty, a large number of northerners moved south. Gradually, the food culture in the north influenced the southern areas, and formed its own genre in the southern region. The sweet taste also gradually spread to the south. [13]

By the end of the Ming Dynasty, Chinese food was divided into Beijing, Jiangsu and Cantonese. The Beijing style is slightly salty, the Jiangsu style and the Cantonese style are sweet.

By the time of the Qing Dynasty, Xu Ke recorded in his book *qing bi lei chao* said: "Everyone with unique cuisine, such as Jingshi, Shandong, Sichuan, Guangdong, Fujian, Jiangning, Suzhou, Yangzhou, Zhenjiang, Huaian. Later, it was summarized into four major cuisines: Shandong, Sichuan, Guangdong and Jiangsu.cite [14]

Since the beginning of the Republic of China, there has been considerable development of cultures across China. Sichuan cuisine is divided into Sichuan cuisine and Hunan cuisine, Cantonese cuisine is divided into Cantonese cuisine, Fujian cuisine. Jiangsu cuisine is divided into Su cuisine, Zhejiang cuisine and Hui cuisine. Because Sichuan, Shandong, Guangdong, and Jiangsu four cuisines had an early history, later, local dishes such as Fujian, Zhejiang, Xiang, and Hui were also gradually famous, forming China's "eight major cuisines." Later, the most influential and representative of the society were recognized: Jiangsu, Sichuan, Guangdong, Su, Min, Zhejiang, Xiang, AnHui and other cuisines, which are often called the "eight major cuisines" of China.

However, due to the development of agricultural industry, transportation and process of urbanization and migration in China, the procedure that people brought their local dishes to other places leads to the unification of diet habit across the nation. Nowadays family dishes in a single family contains different cooking genres from many other provinces of the nation. The whole cooking procedure of Chinese food generally includes, cutting, frying, boiling. However other unique techniques based on local traditions still exists in various areas.

Manner

Because the ancient Chinese did not share meals (eat a plate of food together), the table setting and tableware at that time were very different from today. In

addition, due to the constraints of ethics and hierarchy at that time, the Chinese royal family and upper class also insisted on a meal-sharing system. Although the custom of the meal sharing system continued in the royal family until the late Song Dynasty, in fact after the Sui Dynasty, everyone shared a dish has been common and popularized on some occasions. [15]

The tradition of divided meal system lasted for a long time. However, after the demise of the Song Dynasty, during the Yuan Dynasty under the rule of Mongolian, the meal-sharing system ceased. After the dynasty, including the Ming and Qing dynasties, China's eating habits have basically been converted into sharing one dish together. [15]

Moreover, Contrary to current Chinese habits, people in ancient times placed chopsticks horizontally next to bowls or plates. It is placed horizontally, not vertically. People need to cross chopsticks after eating.

Tableware

In the past, lacquer ware was very expensive in China, but at the same time it was considered to be the most suitable utensil as a tableware. However, due to its high cost and high price, lacquerware was eventually replaced by porcelain. [16]

From the perspective of color, light-colored tableware (including light-colored porcelain) has become more and more popular. This is because in ancient China, in order to prevent contact with luxury and waste, tableware will avoid being too gorgeous. Therefore, most of the tableware in ancient times was dark, red or purple, and there were not too many patterns or carved on it.

2.1.4 Related Design

Xia Chufang is a website of Beijing Ruidi Interactive Technology Co., Ltd. As a gourmet recipe sharing community, it provides copyrighted practical recipe practices and diet knowledge from strangers, and creates a record and sharing platform for chefs and food lovers.



Figure 2.1 Chinese recipe sharing platform- Xia Chufang

2.2. Ascendance of Individualism in 21st Century

2.2.1 The origin and development of Individualism

The word 'individualism' was first used in the early 19th century by Owenism (a group of revolutionaries aimed for radical reform of the European society into utopia communities), although as a pejorative. [17] However, with the ongoing process of modernization in the 19th century and the idea of progress during that century, individualism became valued more positively. According to Ellen Meiksins Wood—Individualism is the moral stance, political philosophy, ideology, or social outlook that emphasizes the moral worth of the individual. [18] Individualists promote the exercise of one's goals and desires and so value independence and self-reliance and advocate that interests of the individual should achieve precedence over the state or a social group.

2.2.2 Individualism in 21st Century

In general, individualist cultures tend to conceive of people as self-directed and autonomous, and they tend to prioritize independence and uniqueness as cultural values. Collectivist cultures, on the other hand, tend to see people as connected with others and embedded in a broader social context – as such, they tend to emphasize interdependence, family relationships, and social conformity. [19] According to the research, which examines 51 years' worth of data detailing individualist

practices and values in a total of 78 countries, conducted by Igor Grossmann (University of Waterloo), and Michael E.W. Varnum (Arizona State University) based on the national census data and data collected for the World Values Survey, both individualistic practices and values increased across the globe over time. Specifically, statistical models indicated that individualism has increased by about 12 percent worldwide since 1960s. [20]

With the development of the economy and globalization, the ascendance of individualism has begun in Chinese society. Due to the improvement of modern communication technologies and the bloom of various social platforms, tradition and traditional institutions becomes less determining, hence that the individual has the cognitive ability to carve out a more independent domain of social life for itself, which means that individualization, and with this the notions of freedom and autonomy, is an intrinsic characteristic of the process of modernization in China. The 90s generation opt to live alone, delay or forego marriage, and recede into their smartphones, rates of loneliness are skyrocketing. Living alone, living single, and living single longer is an essential part of the ascendance of individualism.

"Empty-nest youth" is a new word, which refers to young people who live apart from their parents and relatives, who are single and rent a house alone. Most of them leave their hometowns and work alone in big cities. Their living space is relatively independent and closed, and their emotional networks are sparsely connected with relatives and friends, presenting an "island" and "cocoon house" style of living. [21]

In September 2016, the China Youth Daily Social Survey Center conducted a survey of 2,000 people through the questionnaire. According to data, 64.3 percent of the respondents said that there are many "empty-nest youths" around them. Through existing surveys and interviews, the characteristics of "empty-nest youths" can be roughly described in terms of education level, work, life, and social interaction: 1. generally they have received higher-level education, they have relatively decent job opportunities;

2. Most of them have dreams and are ambitions to pursue a wonderful life;

3. Although facing the pressure brought by the blocked rise (12.9 percent), they still hope to take root in the city through their own hard work;

4.They lives in rented houses and the commuting time to work is long. They describes it as "Climbing the mountains and mountains to work, every day is either on the way to work or on the way to work";

5.They have a strong desire for social activities, but most social interactions are based on virtual social interactions because of the following reasons: presenting difficulties in life (49.5 percent), narrow social circles (48.1 percent), chaotic work and rest (39.6percent), and lack of entertainment (33.2percent).

6.They tend to stay single or keep long-distance relationship.

Although solitary young generation pretend to be okay, it is difficult to conceal the negative emotional experience of inner loneliness, anxiety, feelings of loss and frustration. In general, lack of emotional support (57.9 percent) and poor living conditions (57.8percent) are considered to be the two major difficulties they face. [21]

2.2.3 The Declination of Marriage Rate

According to the data released by the Ministry of Civil Affairs during press conference on the morning of January 1st,2020–In 2019, the national marriage registration authority handled a total of 9.471 million pairs of marriage registrations, 4.154 million pairs of divorce registrations, and 4.034 million pairs of marriage certificates and divorce certificates. [22]

This is also the decrease in the number of marriages in China for six consecutive years. The data shows that in 2013, civil affairs departments and marriage registration agencies at all levels in China handled 13.469 million pairs of marriage registrations in accordance with the law. However, after experiencing this historical high of nearly ten years, it has continuously decreased for the next six years. Among them, there were 668,000 pairs in 2019 compared with 2018. [22]

Marriage rate in China has been declining year by year, mainly due to the following reasons: First, the total number of marriageable people has declined. China has implemented a family planning policy since the 1970s and 1980s, and the number of births has decreased. This is the main reason for the current decline in marriage rates. Second, with the development of the economy and society, many people's marriage concepts have changed. Third, with the popularization of higher education, young people 's years of education have increased, the age of marriage

has been continuously delayed, and a considerable portion of the marriageable population has not been married. [22]

With the development of urbanization, the population has gathered in large cities, and the age of marriage has been increasingly delayed. Ding Changfa, an associate professor in the Department of Economics of Xiamen University, analyzed First Financial and Economics that big cities are different from the acquaintance society of small and medium cities. Compared with small and medium cities, young people will be more independent in big cities. In addition, due to the high housing prices in large cities, the pressure of life is greater, the pace of life is faster, the age of marriage is later, and there will be more single people. [23]

And this will likely further affect the number of births. On January 17, the National Bureau of Statistics released the 2019 Economic Annual Report. The data shows that the population born in 2019 was 14.65 million, with a birth rate of 10.48 . According to the 2018 data, the First Financial Reporter found that the number of births in 2019 decreased by 580,000 compared with the previous year. The population born in 2018 was 15.23 million, a decrease of 2 million from 2017. [24]

2.2.4 Related Design

LOVOT is a penguin shaped device can be used as an artificial intelligent pet, which has lots of functions, all aimed at bringing out people's loving side. LOVOT



Figure 2.2 LOVOT

recognize the face of its owner and want to get closer for more love. It interacts with users as they're alive. It can recognize user's face and posture, and responding with some of their own. It recognizes users movement and follows around. It will create a map so that it can move around the house, recognizing spaces and

adjusting its speeds and directions. It can also welcome users back to home every night by moving to front door and wait.

2.3. Barriers in Intercultural Communication

Intercultural communication is a discipline that studies communication across different cultures and social groups, or how culture affects communication. [25] With the development of globalization, according to a survey conducted by Ministry of Education in China, there are 660 thousand oversea students by 2018. [26] Intercultural communication includes the wide range of communication processes and problems that naturally appear within an organization or social context made up of individuals from different religious, social, ethnic, and educational backgrounds. How people from different countries and cultures act, communicate and perceive the world around them. [27]

2.3.1 Immigration Trend in China

The first wave of overseas immigration was what we commonly called "Xia Nanyang". From a time perspective, the number of emigrants was about 10 million from the Opium War to the eve of World War II. As mentioned above, the immigration places are mainly Guangdong and Fujian, while the immigration places include Oceania, America and Europe in addition to Southeast Asia. [28] This batch of immigrants is for labor exports, so for China, it is not only conducive to reducing overpopulation, but also increasing remittances from overseas Chinese, and attracting foreign investment in a few years. In fact, it has not only promoted the economic development of Southeast Asia, but also help increase wealth in Guangdong, Fujian and other places in China.

The second wave of overseas immigration after the reform and opening up, the number of immigrants exported from China was about 4 million. The main forms of immigration are family reunion, study abroad, investment immigration and skilled immigration. A considerable percentage of the above-mentioned immigrants are intellectuals and technicians. Although losing a small amount of talent, capital and related wealth in stages, it has promoted economic and trade

exchanges between China and overseas, and has made tremendous contributions to China's economic . [29]

In recent years, the third wave of Chinese overseas immigrants is rapidly expanding. Unlike the first wave of labor immigration and the second wave of skilled immigration, the current third wave of immigration is dominated by investment immigration and education immigration. [30]A large number of high-net-worth people or their children continue to carry capital out of the country through overseas investment, overseas property purchase, overseas childbirth, overseas study (secondary school, university), etc, which also includes a large number of corrupt officials carrying property and family members led by state-owned enterprises.

The situation of China's third wave of immigration is completely different from the previous two: the real surplus labor force is in fact unable to export due to the restrictions of immigration laws of developed countries. On the contrary, it is seriously scarce of high-tech talent, wealthy class carrying wealth.

The United Nations released the "2013 World Migration Report" in September 2013. The report showed that there were 232 million immigrants worldwide in 2013, accounting for 3.2 percent of the global population. As the fourth largest country of immigrants, China has 9.342 million immigrants. [30]

2.3.2 Language Barriers in Intercultural Communication

Cross-cultural misunderstanding happens when people from different cultures communicate or interact with one another. People from one culture act according to their norms and values, but the other does not understand the message the way it was conveyed and might interpret differently due to the cultural differences. Cultural misunderstanding also occurs when a word, gestures or social context have different meanings in different cultures. [31]

Language is an example of an important cultural component that is linked to intercultural understanding, which is the primary problem overseas students face in their life abroad. Words don't necessarily translate from one language to another in a simple one-to-one correspondence. The same word may have different meanings to people from different cultures and areas. The level of context also affects the process of intercultural communication. Some cultures are low-context, meaning they put a message into explicit words. In these cultures, saying "no"

when you mean "no" is just considered straightforward or honest. High-context cultures, such as Japanese, sometimes saying "yes" or "maybe" when they actually mean "no," because they prefer an outright refusal blunt rather than honest. [32]

Moreover, Differences in culture and communication styles can even cause fear. [32] For example, individuals from Japan typically keep a tight control of their emotions, while Chinese, Korean and people from other Asian countries are more comfortable showing their feelings.

2.3.3 Stereotype and Discrimination in Intercultural Communication

Stereotypes and prejudices about people from other cultures also leads to communication problems and cause offense. Ethnocentrism, or a belief that your own culture is better than that of others, can lead to acting superior toward other groups and not treating them well. [33] The most important and most reflective feature of culture is that it has an ethnocentrism tendency. It is expressed as a sense of national superiority, that is, to judge the value of other cultures based on the cultural value of the nationality, and that the value of other national cultures is lower than the cultural value of the nationality. Every culture tries to use its own cultural value to observe and evaluate others, especially when cultural conflicts occur, each culture is used to raising its own cultural value in order to unite the beliefs of cultural groups. Chinese oversea students usually suffers from stereotypes and prejudice caused by different culture background and unique political background.

We are always accustomed to enhancing the value of ourselves by enhancing the value of the cultural group to which we belong. Therefore, we are inclined to identify with the cultural values we belong to and use the cultural lens observe other cultures trough filter. Unfortunately, different degrees of national superiority almost always appears in cross-cultural communication, which affects the effectiveness of communication, which often leads to mutual exclusion between individuals and cultural groups, and prevent meaningful information exchange. However being an oversea students means cutting off your culture bond with the cultural group you are familiar with all your life and will cause the sense of isolation easily.

Intercultural communication barriers make it difficult for the Chinese overseas student to make foreign friends and gain familiarity with the local culture. Sometimes, these language barriers can lead to ignorance or disrespect from native speakers. Most international students are also lacking support in foreign countries. All the issues above leads to the lack of self-identification, loneliness, nostalgia and other psychological problems.

2.3.4 Related Design



Figure 2.3 interface of Yuda translator

Youdao Translator is a high-quality translation application owned by NetEase. It is an essential dictionary translation application with Youdao Dictionary. It is also the first dictionary translation application in China that supports offline translation. Currently, it supports global translation in 107 languages including English, Japanese, Korean, French, Russian, and Spanish. It is also equipped with powerful voice translation and photo translation functions. Voice translation, unimpeded when users are abroad, it is the accompanying translator around them.

2.4. Elements of Ambience

2.4.1 Color and Light as an ambience

Ambience which refers to the character and atmosphere of a place, according to Oxford Dictionary. [34] Ambience includes a series of things which triggers five senses of human, such as sight, touch, scent, sound.

Light plays a very important role in creating an ambience. There are five types of lighting, which can create an ambience at home known as general, ambient, mood, accent and task. General lighting is that which provides uniform light across a space and is often entirely practical. Ambient lighting is similar, but can be controlled to change the overall feel of a room. It's often softer than general lighting, never directly towards any occupant of the room. Mood lighting is more precise, allowing you to balance light and dark with carefully positioned table lamps and freestanding lamps that are closer to eye level. Accent lighting is lighting which is designed to draw specific attention to a feature within a room. For example, spotlights on bookshelves, artwork, photographs and ornaments are a great way to draw the eye without being overpowering. Finally, task lighting is a light source designed to help an occupant with an activity, such as reading or applying cosmetics. Swing lamps and light sources near mirrors can help light these tasks while maintaining the overall ambience of a room. [35]

Color also plays an important role in conveying information, creating certain moods, and even influencing the decisions people make. [36] Just like colour, lighting can create a certain mood within a space. And when combined with colour, lighting can enhance, complement or even offset the intensity, brightness and overall attractiveness of a paint scheme. [37] Chromotherapy, sometimes called color therapy, colorology or cromatherapy, is an alternative medicine method, which is considered pseudoscience. Chromotherapists claim to be able to use light in the form of color to balance "energy" lacking from a person's body, whether it be on physical, emotional, spiritual, or mental levels. [38] Several ancient cultures, including the Egyptians and Chinese, practiced chromotherapy, or the use of colors to heal. Colorology is still used today as a holistic or alternative treatment. Most psychologists view color therapy with skepticism and point out that the supposed effects of color are often grossly exaggerated. Colors also have different meanings in different cultures. [39]

Recent research by the group has found a small effect of coloured light on heart rate and blood pressure: red light does seem to raise heart rate, while blue light lowers it. The effect is small but has been corroborated in a 2015 paper by a group in Australia. In 2009 blue lights were installed at the end of platforms on Tokyo's Yamanote railway line to reduce the incidence of suicide. As a result of the success

of these lights (suicides fell by 74 percent at stations where the blue lights were installed), similar coloured lighting has been installed at Gatwick Airport train platforms. [40]

2.4.2 Sound As an Ambience

In film and media production, ambient sound is a standard term that denotes the site-specific background sound component providing locational atmospheres and spatial information of public places. [41]

According to the online resources Wikipedia and Media College, in the context of filmmaking, “ambience” consists of the sounds of a given location or space. This definition correlates ambience with other associated terms, such as atmosphere, atmos, and background sound. The resource-rich website FilmSound.org suggests that “ambience pertains to the pervading atmosphere of a place.” [42]

To the sound artist and practitioners, ambient sound injects life and substance not only to what we see on the cinematic screen but also to the off-screen story-world. The practitioners use the material layers of ambient sound to construct the experience of presence. Ambient sound helps to mount atmospheres of the public or social aspect of a site in mediated environments. These practical considerations underscore its site-specific, public, and spatial nature. [42]

2.4.3 Autonomous Sensory Meridian Response

ASMR: Autonomous Sensory Meridian Response is the experience of tingling sensations in the crown of the head, in response to a range of audio-visual triggers such as whispering, tapping, and hand movements. [43] ASMR can also be triggered by physical contact, such as receiving a massage or getting a haircut. It is often described as relaxing, and, once triggered, is believed to help induce sleep or ease anxiety. [44]

ASMR appears to share similarities with more well-established sensory experiences including the “shivers-down-the-spine” that some (but not all) people experience during music-listening and profound aesthetic experiences. Research on aesthetic chills has assessed the physiological parameters that correspond with these complex emotional experiences, typically by presenting participants with

chill-inducing stimuli (e.g., self-selected musical excerpts) and measuring aspects of physiology. A number of studies have consistently associated aesthetic chills with increased heart rate, a finding that may be specifically linked with the onset of piloerection associated with chills. Less consistently, aesthetic chills have been associated with increased respiration rate, respiratory depth, and increased skin conductance response. Taken together, the above evidence shows that phenomenologically complex and idiosyncratic emotional experiences can be identified by various physiological parameters, which in turn, have implications for how these emotional states might affect physiological health. [43]

2.4.4 The ASMR Boom on social Platform

A dedicated ASMR subgroup on Reddit (<http://www.reddit.com/r/asmr/>) boasts 86,000 subscribers from around the world, and some of the most popular ASMR content creators on video sharing site Youtube all over the world.cite These figures show that the culture surrounding ASMR is in no way insignificant. Several reputable international media outlets have reported on the attention this phenomenon is receiving, and the lack of scientific explanation. (Marsden, 2012; Tomchak, 2014). Media designed specifically to produce ASMR has amassed a community of thousands of members. Capable individuals utilise a variety of visual and audio stimulation—most typically through video sharing—to achieve a tingling, static-like sensation widely reported to spread across the skull and down the back of the neck (Taylor, 2014). The advent of online video communities has facilitated a gathering of those who experience ASMR, and as a result hundreds of videos have been produced, viewed and shared with the goal of inducing this sensation, which is said to be paired with a feeling of intense relaxation. [45]

2.5. Summary

Based on literature review, we can find that there are significant differences in the food culture of various countries and regions. Different geographical, historical and cultural backgrounds give families in various regions their own unique food culture. In order to preserve the food culture of different regions, it is very important to record family recipes. At the same time, different ingredients and different cooking

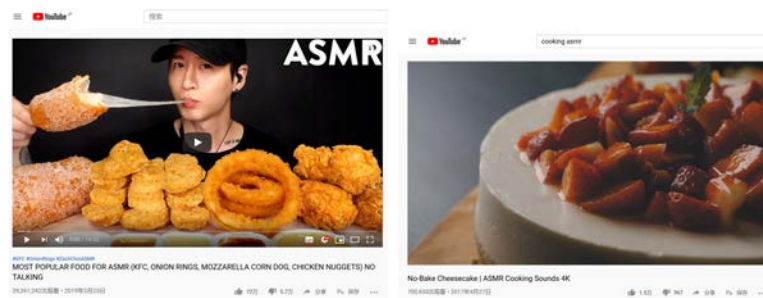


Figure 2.4 cooking and eating asmr youtube channel

skills also make each family have a unique experience in the process of cooking. As a part of traditional culture and daily life, Chinese cuisine is inseparable from the reunion of family members and is part of the precious memories of family members. How to continue sharing the happiness brought by co-cooking experiences under long-distance conditions is a very important proposition.

Although there are many researchers aims to improve cooking experience through designing new cooking technologies, there are few research focus on how to remain family history and improve family closeness remotely. Cooking app such as Cookpad, Xia Chufang are very useful online recipe sharing platform between strangers but it cannot preserve family taste. Moreover, those platform focus on teaching people how to cook instead of sharing cooking experiences.

Most of the product targeting at solitary focus on how to make their life more convenient, little of them focus on their emotional needs. Social platforms which aims at connecting individuals with each other are usually used among same generation. Some younger generation prefer to hide their social media account from their parents because they have clear boundary between family life and personal privacy. They don't want their family bother or worry about them all the time. Therefore, a specific communication tool within family members is very important.

Cooking experience is an essential daily activity and human social practice within family members. Childhood home living environment have profound effect on his well-being. Some essential elements around us may trigger specific memory in our childhood even when we grew up. Those memories also leads to feelings such as happiness, relaxation, sadness or stress and still have great impact to our

adult life.

Considering that home cooking process includes many elements that may trigger the five human senses- taste, touch, smell, sight. I came up with the idea of PUKU, an interactive lighting and audio device to improve the individual living space for overseas students who are living alone. It generates different cooking sounds which remind overseas students of their family life, create a comfortable living environment and reduce loneliness.

Chapter 3

Design

3.1. Design Concept Overview

PUKU's original idea was a communication tool for internal use only at home, named the secret kitchen. Each family member can freely upload, collect, modify recipes, and at the same time can instantaneously communicate and communicate.

The idea of PUKU is inspired by the personal cooking experiences and my childhood life spent with my family members. My grandparents moved overseas for many years, and now I am also far away from my parents as an international student. The three generations lived in completely different countries.

Therefore, the original idea was to address the current situation where close family members are becoming more and more distant in the context of globalization, and keep connection with their loved ones across time and distance through the food culture which Chinese people value most. It aims to help Chinese family living remotely to experience the joy of reunion again.

The final design of PUKU is the combination of prototype 1 and prototype 2. It includes an app and a device which can interact with each other. The improved product better realizes the communication between families and the personal companionship for oversea students. Users can not only save family recipes and communicate with family members, but also feel the company of family members when they are alone.

3.2. Target Persona

It is made for family who lives far from each other who have the following features

- 1, One of the family members is living alone. He or she enjoys staying at home

during their free time and is interested in home decoration.

2, All family members are capable of using smartphone.

3, All of the family members enjoy or at least have interest in learning cooking.

3.3. Prototype 1

3.3.1 Concept

Secret Kitchen is an app targets at Chinese oversea students who live remotely from their parents. It offers them a place to interact with their parents as well as learning family recipes. It is a combination of communication tool and recipe sharing platform inside their family, which offers family members chance to share photos, create recipes, amend or comment on others recipes.

The first purpose of the secret kitchen is to promote communication between family members, so that family members can once again feel the warmth around cooking experiences. There have been three waves of immigration in China. With these three waves of immigration, the distance between family members has become increasingly greater. Taking my personal experience as an example, when I was young, the family would be together during the Spring Festival to prepare New Year's dishes from morning to night. But after my grandparents moved overseas, the time for the family to cook together became less and less. But every time I visit my grandparents, they still remember my favorite dishes.

The second purpose is to preserve family recipes while further protecting family memories and traditions. Family recipes are a very important part of the inheritance of food culture. After the founding of New China, China was also involved in the wave of globalization, and the eating habits of the Chinese people also changed a lot. As a generation born after the reform and opening up since the 1990s, they have lived in an international and multicultural environment since childhood. They are more inclined to burgers, pizzas and other exotic foods than traditional home cooking. At the same time, with the development of society, the pace of life has become faster and faster, and eating out has become the first choice for young people. Many young people have no motivation and no reason to understand home cooking, which also leads to the loss of traditional food culture.

3.3.2 Design Process

Secret Kitchen is loaded with latest recipe uploaded by family members and weekly recommended recipes from a single family member. By clicking each recipe users can see the details and make comments for other family members(Fig.1) .

Interface and Function Design



Figure 3.1 surface of secret kitchen

It has 4 basic functions-Chatting with family members, sharing daily meals, creating recipe and managing account:

-”Chatting”-Users can talk to any family members as other social platform and know their location weather and time by checking their homepage(Fig.2).



Figure 3.2 chatting room and other’s homepage

-”Sharing”- Users can share their daily life with members as well as like, comment others’ pictures(Fig.3).



Figure 3.3 sharing daily meals

-”Creating recipes”-To cater for all generation’s needs there are 2 ways to create your own recipe. Users can either write or simply upload their cooking videos(Fig.4).



Figure 3.4 uploading recipes

-”Managing account”- On homepage users can see all the interactions they have with other members and check their own recipes(Fig.5).

3.3.3 Evaluation

After finishing the prototype, the 1st round evaluation was conducted in KMD (Keio Media Design).Participants includes 1 male and 5 female Chinese students. Although it is inoperable prototype but the participant can understand the flow

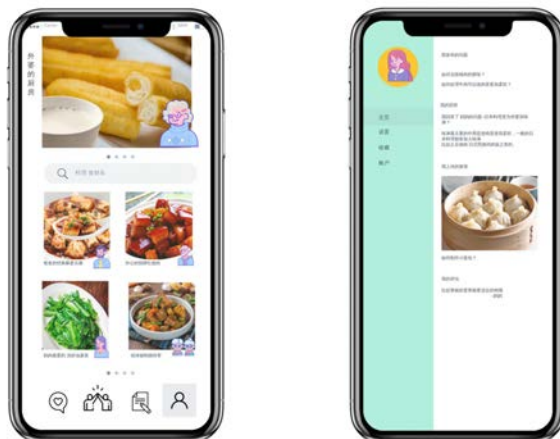


Figure 3.5 personal homepage

through audio instructions while browsing all the interface designed for the app. Results of the evaluation were reflected in survey through questionnaires.

There are two basic goals in secret kitchen. One is to help users learn family recipes, the other goal is help users interact with their family. All of the participants feel this app can help learning family recipe as well as interacting with their family(Fig.6).

After hearing the audio instruction, all the participants think Secret Kitchen is very easy to operate(Fig.7).

All the participants showed great interest in trying out the prototype. they agree that it is very innovative and beneficial to have a communication tool like it inside their family. When being asked how likely is that you recommend this app to your family and friends, all of the participants wants to try it out with their family or recommending it to their friends(Fig.8).

Furthermore, the philosophy of Secret Kitchen is creating a place like family kitchen, where they can communicate, interact with their family. when being asked their first impression of this app, they answered "mom""home""signature dish""grandma". All those words are related to family just as it is designed for. The result shows that it is necessary for Chinese oversea students to find a way to learn their family recipes, not only as a basic life skills but also as the succession of

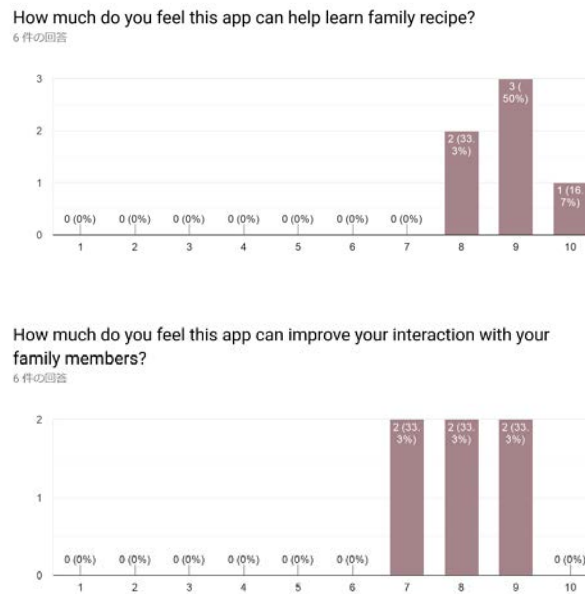


Figure 3.6 result of perceived usefulness question

family history. Every food we eat is related to certain historical, geographical and social background, and becomes the reflection of a particular age. Family recipe plays an important role not only in maintaining family dietary structures but also in succeeding culinary traditions and national culture.

Sharing cooking experience can help improving inter-generational interaction and closeness in Chinese family living remotely. Because of different education and social background, different generation sometimes lack communication over other personal issues. Thus, an internal communication tool customized for family members is necessary. Many Chinese oversea students growing up without cooking or other living skills. The best teacher in real life is their parent. They can have further understanding of their parents through communication in this app instead of keeping their parents away from their other social media accounts.

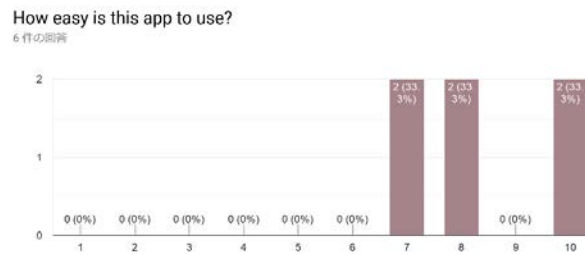


Figure 3.7 result of ease-to-use question

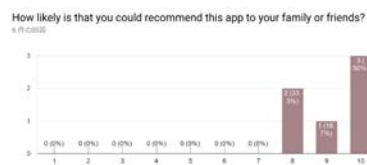


Figure 3.8 personal preference

3.4. prototype 2

3.4.1 Modified Concept

Considering that home cooking process includes many elements that may trigger the five human senses- taste, touch, smell, sight. I came up with the idea of PUKU, an interactive lighting and audio device to improve the individual living space for overseas students who are living alone. It generates different cooking sounds which remind overseas students of their family life, create a comfortable living environment and reduce loneliness.

3.4.2 Background

Interior design is an art of designing the inner space creatively and technically. The designed space should be visually attractive and functionally. The main purpose of interior design is to make these elements work together in harmony in order to create an increased functionality. To start, an interior designer will assess the room according to these interior design elements, and then use them to disguise

or enhance the various features and flaws of the space.

There are 7 elements which should be taken into consideration during the process of interior design- space,line,form,light,color,texture,pattern. [46]

Space, the foundation of an interior is Space, equipped to take advantage of what is available to you. The available 'space' usually can't be easily changed so we need to work with what you have within the physical boundaries of the room.In interior design we have the luxury of working within three dimensional space (length, width and height). This three dimensional space can be filled or left empty, depending upon what we need to achieve from a functionality and design perspective. [46]

Light, natural or man-made light is a critical aspect of any space. Without it, all of the other elements would not be able to shine to their full potential. Light can be broken into the categories of task lighting (defined purpose), accent lighting (emphasising objects) and mood lighting (adding ambience).When considering lighting, it is important to address the activities that will be undertaken in the space. Both the quality and quantity should be assessed here. For example, an office will require bright lighting so that the workers can see clearly and act alert. On the other hand, living room lighting can be applied with a softer touch. Applying a dimmer has the ability to make a space much more versatile. Natural lighting should always be taken into consideration, and can be manipulated through clever placement of doors, windows and even mirrors.Beyond its functional purpose, light has the ability to set the mood and atmosphere of a space while defining colour, line and texture. Plus, any good interior designer also knows that the lighting fixtures are a visual feature in themselves, which can add the right touch to any design. [46]

Colour, is a science all on its own, and is another extremely important element that interior designers master. It has the ability to create mood, define unity and alter the perception of how large or small a space is.The psychology of colour should not be underestimated, and will be used to full advantage by any skilled interior designer. Colour can evoke memories and stir emotions, stimulating a physical and psychological response in our bodies. For example, greens and blues entice calmness and are suited to bedrooms, whereas red entices appetite and therefore often features in kitchens.When considering the colour of a room, first

think about what the room will be used for and the activities that will occur in that space. Secondly, consider how both natural and artificial lighting will affect your selected colour across the day and night, given that light can alter our colour perception. Finally, consider the size of the space. Interior designers will often incorporate lighter or brighter colours in smaller spaces to give the illusion of more space. Darker colours can give a powerful dimension to a larger space. [46]

3.4.3 Design Process

Pre-survey

For pre-survey, I interviewed 4 oversea students living alone in Japan. When being asked of your image of home, they answered warm, food and yellow light. When asked what do they feel having someone cooking for them, they answered “touching, happy and loved, when asked if they feel lonely 3 of them answered yes, and when asked if they are willing to buy a home device to improve their living space or reduce loneliness, everyone answered yes. When being asked if they have experienced ASMR everyone said yes. And when asked what kind of cooking sounds make them relax they answered. but when asked which kind of cooking sound make them less lonely, they answered “cutting vegetables, boiling soup and taking out dishes”

Fieldwork

For fieldwork. I went to visit Tokita Fumika and observe how she cooks for her family. She is a 56 years old, a housewife living in Tokyo. She has a son who lives by himself now. She used to go to Hairdressing school but she became a full time housewife in her 40s. She does some part time job in her free time. She likes going out with her friends in daytime. She is a very good singer. She always prepares dinner for her husband before he comes back.

Here is her sequence model: She washes vegetables. She cuts vegetables into pieces. She turns on the gas. She puts a fry pan on the gas. She takes out tofu. She puts oil into the fry pan. She put vegetables inside fry pan. She turns over vegetables until they are cooked. She adds salt. She puts some soy sauce. She tastes it. She puts in more tofu. She turns off the gas. She opens the cardboard.

She takes out a dish from the cupboard. She pours it into the dish. She hands it to me.

Image Design

The image of PUKU is a wandering cloud which represents the status of international students all over the world who live alone. It is inspired by a traditional Chinese folk named "Clouds from my hometown", Which express the nostalgia of people who left their hometown to seek for fortune. Here is the lyrics of the song:"The clouds in the homeland drift across the sky, it keeps calling me. When the breeze blowing gently around me, there is a voice calling to me. Come back, come back, wandering around the world. Come back, come back, don't wander around. Following the heavy steps, the road to home is so long. When the breeze around me gently blows up, the fragrance of the soil in my hometown. Come back, come back, wandering around the world. Come back, come back, I'm tired of drifting. I'm tired and full of tears in my eyes. The wind of the hometown and the cloud of the hometown erased the scars for me I used to be full of pride, but I came back empty. The wind of the hometown and the cloud of the hometown healed the wounds for me."(Fig.3.9)

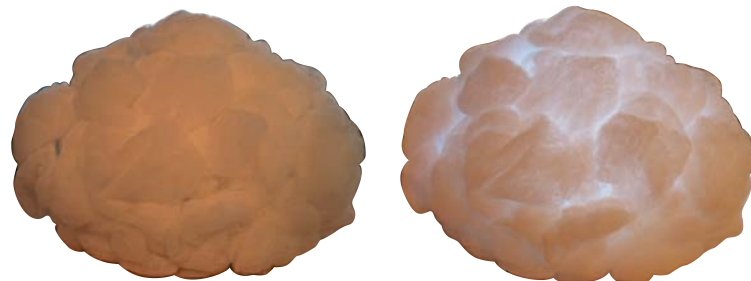


Figure 3.9 prototype of the device

Light Design

Lighting is not the main function of PUKU, but it is an important element to provide companionship and enhance fun. PUKU provides four kinds of brightness gradient light sources, which can change as people approach and leave. The Closer

the user is to PUKU, the brighter it will become. On the contrary, if user is far away, the lighting will automatically turned off.

There are five kinds of lighting in Interior design: direct lighting, semi direct lighting,semi indirect lighting ,indirect lighting.

PUKU uses indirect warm light generated by shielding the light source, which is 90 percent -100 percent of the luminous flux acts on the working surface through the ceiling or wall reflection, and less than 10 percent of the light directly illuminates the working surface. It is used in conjunction with other lighting methods to achieve special artistic effects.

The main purpose of choosing this lighting is to integrate as much as possible into the surrounding environment without appearing obtrusive. PUKU is usually used in the evening after work or study, or in the early morning when you wake up alone. In the natural environment, before sunrise and after sunset, natural lighting in nature is indirect lighting. The lighting method that is closer to natural light can provide a warmer and more comfortable environment suitable for rest.

Color is also inseparable from the light source, and there is no color without light. A standard light source includes the spectrum of the light source, brightness of the light source, softness of the light source, color temperature of the light source, and color rendering index of the light source. Color temperature and color rendering index are two different physical concepts. Color temperature reflect the warmer or cooler color of the artificial light source. The color rendering index reflects the types of colors that can appear under a certain light source. PUKU uses warm orange light with light temperature between 2000k-3000k to create a cozy, calm, inviting and intimate atmosphere. Meanwhile, according to the results of the previous survey, it can be known that a warm yellow light source is a symbol of home in the hearts of the interviewees.

Audio Design

The audio effect aims to recreate the cooking process using high quality audio materials, such as cutting vegetables, turning on and turning off the gas, boiling soup, taking out dishes. The audio materials are carefully selected to make user feel comfort and relaxed.

3.4.4 Evaluation

The evaluation was conducted in KMD among 10 international students who are living alone.

Participants suggestions and advice are focused on 2 aspect. One is customization, the other is Uniqueness. Considering people with different cultural background have different cooking techniques and process, so it is better to let the user to create her own light and audio materials

3.5. prototype 3

3.5.1 Modified Concept

The improved product combines the original independent app and device. It has three main goals, one is to learn and keep family tradition recipes, one is to better realize the communication between families, and the other is to better accompany the international students. Users can not only collect family recipes and communicate with their families, but also feel the companionship of family members through PUKU when they are alone.

3.5.2 Visualization Design

The image of PUKU is a wandering cloud which represents the status of international students who live alone all over the world. It is inspired by a traditional Chinese folk named " Clouds from my hometown", Which express the nostalgia of people who left their hometown to seek for fortune. Different colors represent family members of different ages. In addition to representing homesickness, it also means a remote reunion based on this platform. The font for logo is Fira Code



Figure 3.10 the logo

which is slim, light which is consistent with design and concept of the cloud.



Figure 3.11 Fira Code

Comfortaa, a playful and inviting font, is used on register and home page to make users feel curious about the information.



Figure 3.12 Comfortaa



Figure 3.13 Robot

The main font of this app is robot, it is simple and neat, which can create pleasant user experiences.

3.5.3 User Scenario

User scenarios are stories which designers create to show how users might act to achieve a goal in a system or environment. Designers make scenarios to understand users' motivations, needs, barriers and more in the context of how they would use a design, and to help ideate, iterate and usability-test optimal solutions.

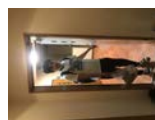


Figure 3.14 Scene 1- user coming back to home alone



Figure 3.15 Scene 2- opening the app

The following paragraph describes the user scenario of PUKU. It describes each stage of behavior and actions that expected to see while using PUKU.

User comes home alone at night with fast food and beer. He feels very lonely, and really miss his family who liver far away from him. He wish his family can be around and cook for him.

He opens PUKU, a online recipe sharing platform within his family members, with a cute light and audio device. He put the device on the table and start reviewing the family recipes uploaded by his family members.

He clicked PUKU button which triggers the device.



Figure 3.16 scene3-enjoy the ambient created by the device

The device starts to play cooking sounds uploaded by his family members. It reminds him of his childhood, watching grandpa cooking dinner after coming back from school. He feels relaxed and loved.

3.5.4 Deisgn Process

For the new app, in addition to retaining the basic functions of sharing recipes and chatting, interaction with the device has been added. App users can use light and sound effects to reappear their mood and feelings while cooking certain dish. The users of PUKU can play the audio contents uploaded by family members, and control the light and audio materials according to their current mood and needs. While the device itself plays the role of a speaker and a lighting device

which can interact with the app, to create a comfortable living atmosphere at home. The design of app logo and open page follows the previous concept-a



Figure 3.17 the final design of PUKU

wandering cloud. Different colors represent family members of different ages. In addition to representing homesickness, it also means a remote reunion based on this platform. In the process of user registration and login, you need to choose

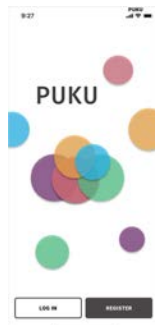


Figure 3.18 open page

your family identity in the family based on your relationship with the holder of the device, such as father, mother, grandfather, grandma, to create a more intimate family atmosphere, increase privacy and closeness. The app has five basic functions, operating device, online chatting, uploading recipes, searching, and personal homepage, all showed on the tab bar of homepage.

On home page users can view the latest recipes uploaded. Click on the certain recipe to browse and collect detailed recipe. They can also play audio recorded and uploaded by other family members. While uploading the recipe, users have to select the color that can express their feeling during the cooking process. the light of device will change accordingly to recreate the same cooking experiences .

On chatting page, users can view their conversation with other family members. By clicking the text, users can open the individual chatroom with certain family

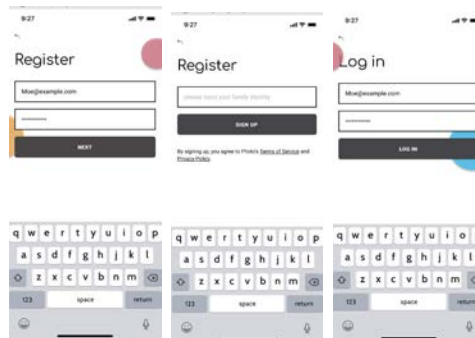


Figure 3.19 register and log in page

member. By clicking on family members photo , users can read the personal profile of other family members.

Search is another function in PUKU, users can search any recipes uploaded by other family members. They can collect the recipe after clicking the photos.

All the recipes will be showed on personal page. Users can edit their profile, classify the recipe, Sign out on this page.

Light and Audio Design

There are two ways to trigger the light and audio device. One is playing other family members' recipe, the other is customizing your own audio and light colors.

The main differences between those 2 option is the quality of audio materials. Audio uploaded by other family members can create the atmosphere of surrounded by family members when users feel lonely, but the quality is very hard to to control. If the users seek for relaxation instead of accompany, they can choose to select different audio material from the existed sound.

Color became a very important element that can be customized in the final design. Family members can choose different colors of light which represent their current feeling during the cooking procedure on the app. Meanwhile, family member with the light and audio device can click play. then the cooking sound will play with colorful light on the cloud shape devcie.

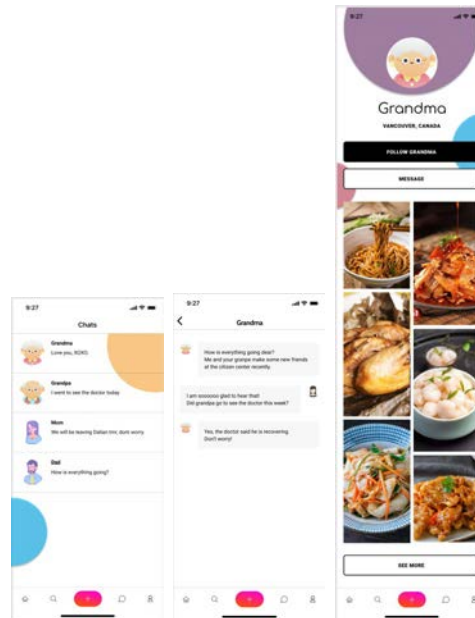


Figure 3.20 chatting page



Figure 3.21 search



Figure 3.22 personal profile



Figure 3.23 device light control

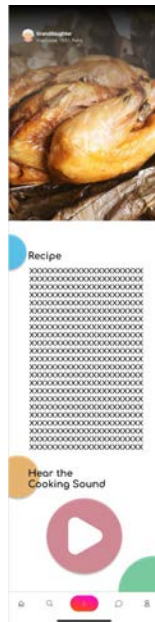


Figure 3.24 review recipe



Figure 3.25 create my own cooking sound

Chapter 4

Proof of Concept

The main method of evaluation for this app is behavioral observation and interview. Due to the spreading of Corona virus, the observation was based on cooking videos materials of each participants and online video chatting tools.

4.1. Participant and Background

The target family in this evaluation is a five-person family with a grandfather, grandmother, father, mother and a daughter. Grandparents are around 80 years old and have long lived in Canada. Parents live in mainland China. The granddaughter is studying in Japan.

Table 4.1 Participants Background Information 1

Family Identity	Age	Location	Character
grandfather (A)	80	Canada	stubborn
grandmother (B)	78	Canada	outgoing
father (C)	49	China	humorous
mother (D)	47	China	neat
granddaughter (E)	25	Japan	loving stay at home

They rarely meet in real life due to the long distance. Most of the time they communicated through online chatting tools such as Wechat. According to previous interviews, the frequency of communication between parents and children is once a week, and the communication between grandparents and children is twice a month. When asked why this frequency of communication is maintained, parents and grandparents said that although they want to communicate more frequently

Table 4.2 Participants Background Information 2

Family Identity	Hobby	Status	Test Item
grandfather (A)	cooking	living with B	app
grandmother(B)	cooking swimming	living with A	app
father (C)	walking	living with D	app
mother (D)	shopping cooking	living with C	app
granddaughter (E)	watching films	living alone	app and device

with their child, lacking of common topics and the fear of disturbing each other's life make it really hard to increase the frequency. one or two short messages or video chatting on the weekend is the basic family routine. Moreover grandparents find it more difficult to contact their grandchildren because of jet lag. Most of the conversation is focus on weather, school life, personal relationship and family news. The granddaughter mentioned she and her parents usually contact each other before and after their trip to other places. They also contact with each other when they need to make big decisions such as home decoration, surgery or job opportunities.

4.2. Test Scenarios

Step 1: All the participants (except E) are required to make a family dish.

Step 2: They need to write down the recipe in detail.

Step 3: Follow the steps on the recipe to restore the cooking process in your mind, and choose the color that can represent your mood and atmosphere at that moment.

Step 4: Interview all participants.

Step 5: Give the collected recipes and color changes to E

Step 6: Observe E's feelings about the sound effects and light color changes recorded by his family Interface design test

Step 7: Explain the function of the app to all participants

Step 8: Observe their use process

Step 9: Let them fill in the survey

Step10: Track their conversation frequency in the next week

4.3. Observation and Interview

Due to the spreading of Corona Virus, the observation is based on the video material send by each family members. All the interviews are through video chatting on Wechat, an online communication tool in China.



Figure 4.1 participants cooking family dish, writing recipe and having interview

4.3.1 Participant A

Family Identity

Grandpa

Observation

Participant A (grandfather) cooked a meat cuisine called Dongporou. He paid great attention while cutting pieces of braised pork in case it is not too small because the cooked meat will shrink nearly twice. Before stewing the meat, he put it in to cold water and wait until the water is boiling to get rid of the unpleasant smell of meat. He also carefully checked the taste before adding the salt. Dongporou should be salty with a slice of sweet. He took great care of adding salt and soybean sauce in order not to cover the sweetness itself.

Recipe

Ingredients: pork belly, soy sauce, star anise, ginger, pepper, sesame oil, rock sugar, garlic, salt

Step 1: Prepare materials, wash pork belly, and cut into mahjong pieces; (Pink)

Step 2: Heat the pan and set the sesame oil, saute ginger slices, garlic, pepper and star anise; (Yellow)

Step 3: Pour pork belly and stir-fry until slightly charred on both sides, add cooking wine or liquor, soy sauce, rock sugar;(Orange)

Step 4: Transfer to a casserole and add appropriate amount of boiling water, simmer for one hour on low heat, pay attention to turning over frequently, on the one hand, evenly color, on the other hand, avoid pigskin sticking to the pot. Sprinkle some pepper and salt just before leaving the pot. (Blue)

Step 5: Put it out, set it up.(Pink)

4.3.2 Participant B

Family Identity

Grandma

Observation

Instead of using tofu, She used frozen tofu which becomes more juicy after stewing with Chinese cabbage. This is how she cook for her family before. she fried the cabbage slightly with hot oil first which is different from other people. She didn't add any other ingredients such as soy sauce, soy sauce, oyster sauce except for the salt. Then she stewed the tofu for more than 15 minutes.

Recipe

Ingredients: tofu (14 photos) 500 g, Onion ginger total 30 grams, Vegetable oil 50g, Salt 3g, MSG 5g, green onion 5g, ginger 5g, chicken essence 2g

Step 1: Cabbage and tofu are properly cut into pieces, minced ginger and shredded onion. Cut tofu into small pieces and cook in boiling water;(Brown)

Step 2: Wash the Chinese cabbage and cut it into segments, put it in the tofu block pot, cook it and pour it out; (Green)

Step 3: Heat the pan, put an appropriate amount of oil, add onion and ginger and saute, add cabbage and fry slightly; (Yellow)

Step 4: Put the pot on a high heat, add vegetable oil to heat, fry the onion and ginger, add the broth (400 grams), salt, tofu pieces and cabbage;(Orange)

Step 5: Stew until the cabbage and tofu pieces are integrated, sprinkle with MSG and chicken essence. (White)

4.3.3 Participant C

Family identity

Father

Observation

He cooked a family dish—fried Chinese hairtail fish. He put all the ingredients into a freshness protection package and the put in the fish. He expelled all the air and sealed the bag to marinate the fish for 3 hours. He used a special pan for frying fish tools, which is simple and easy to use, and the temperature is better controlled. He turns the fish frequently during the frying process.

Recipe

Step 1: Wash the fish and cut into sections; shred ginger; wash onion and shred. (green)

Step 2:The cut fish is marinated in salt, soy sauce, with cooking wine, ginger and green onion. (blue)

Step 3: Wrap the octopus with a layer of flour, slightly shake it off a lit it, and place the fish on a plate. (white)

Step 4: Heat the frying pan, and add oil then fry the rare fish until it turns golden on both sides. (yellow)

4.3.4 Participant D

Family identity

Mother

Observation

First she rinsed the fungus with water, wash it very carefully, remove the hard underneath, teared it into small flowers by hand, beat the eggs and set aside. Before frying she blanch the fungus with boiling water until it's cooked. Then she poured a little oil in the hot pan, spread the eggs and cooked them first. Then she poured a little more oil in the empty pot and put her hand near the fry pan to feel the heat of the oil. When she feel the temperature is high enough. She puts the fungus carrot and stir fry. After seeing the fungus have a shiny luster, she puts in the egg. Then Continue to stir fry a few times, add salt and pepper, stir-fry evenly, and take out.

Recipe

Ingredients: 180g cucumber, 50g carrot and 30g pepper. The fungus hair is washed and the root is torn off.

Step 1: Prepare the ingredients, cut the vegetables.(green)

Step 2: Beat 2 eggs, stir fry pan pout oil, add egg and scatter until cooked. (yellow)

Step 3: Heat up the oil in the pan and add the onion, ginger and garlic to fry, then add the carrot and stir fry; then add the fungus and stir fry; then add the cucumber slices and stir fry. (blue)

Step 4: Finally, add eggs and stir-fry; then add salt, sugar, stir fry evenly, pour in sesame oil and stir evenly, then you can get out of the pan. (Pink)

4.3.5 Participant E

Participant E was required to review all the recipes written by other family members and describe her feeling towards the colors. Meanwhile She also need to listen to the cooking audio of each recipe,and express the feeling of different sound.

Recipe A		
Cooking process	Your feelings (Audio)	Your feelings (Light)
Step 1: Prepare materials, wash pork belly, and cut into mahjong pieces; (Pink) ●	relaxing	warm
Step 2: Heat the pan and put the sesame oil, saute ginger slices, garlic, pepper and star anise; (Yellow) ●	excited	excited
Step 3: Pour pork belly and stir-fry until slightly charred on both sides, add cooking wine or liquor, soy sauce, rock sugar; (Orange) ●	warm & excited	warm fire
Step 4: Transfer to a casserole and add appropriate amount of boiling water, simmer for one hour on low heat, pay attention to turning over frequently, on the one hand, evenly color, on the other hand, avoid pigskin sticking to the pot. Sprinkle some pepper and salt just before leaving the pot. (Blue) ●	relaxed, comfortable, warm	peaceful
Step 5: Put it out, set it up. (Pink) ●	excited	happy

Recipe B		
Cooking process	Your feelings (Audio)	Your feelings (Light)
Step 1: Cabbage and tofu are properly cut into pieces, minced ginger and shredded onion. Cut tofu into small pieces and cook in boiling water; (Brown) ●	chill, relaxed	calm steady
Step 2: Wash the Chinese cabbage and cut it into segments, put it in the tofu block pot, cook it and pour it out; (Green) ●	relaxed	heavy
Step 3: Heat the pan, put an appropriate amount of oil, add onion and ginger and saute, add cabbage and fry slightly; (Yellow) ●	excited	excited fire
Step 4: Put the pot on a high heat, add vegetable oil to heat, fry the onion and ginger, add the broth (400 grams), salt, tofu pieces and cabbage; (Orange) ●	warm calm	warm
Step 5: Stew until the cabbage and tofu pieces are integrated, sprinkle with MSG and chicken essence. (White) ○	relaxed	peaceful

Figure 4.2 test of recipe A and recipe B

4.3.6 Result Based on Observation and Interview

Family recipe is influenced by geographical element, participant C mentioned their preference for fish because they live along the seaside. It is also affected by the historical and cultural element. Participant B's traditional dish is made of delicious local tofu and agricultural product Chinese cabbage .

Family members share same memory about certain family dish. Participant A and E both mentioned Dongpou is a special dish on traditional festivals. Participant E is not capable of cooking compared to other family members but she has deeper feelings and clearer impression of family memory.

The Preference to certain family dish is affected by childhood memory and

Recipe A		
Cooking process	Your feelings (Audio)	Your feelings (Light)
Step 1: Prepare materials, wash pork belly, and cut into mahjong pieces; (Pink) ●	relaxing	warm
Step 2: Heat the pan and put the sesame oil, saute ginger slices, garlic, pepper and star anise; (Yellow) ●	excited	excited
Step 3: Pour pork belly and stir-fry until slightly charred on both sides, add cooking wine or liquor, soy sauce, rock sugar; (Orange) ●	warm & excited	warm & fine
Step 4: Transfer to a casserole and add appropriate amount of boiling water, simmer for one hour on low heat, pay attention to turning over frequently, on the one hand, evenly color, on the other hand, avoid pigskin sticking to the pot. Sprinkle some pepper and salt just before leaving the pot. (Blue) ●	relaxed, comfortable, warm	peaceful
Step 5: Put it out, set it up. (Pink) ●	excited	happy

Recipe D		
Cooking process	Your feelings (Audio)	Your feelings (Light)
Step 1: Prepare the ingredients, cut the vegetables. (Green) ●	relaxed	healing
Step 2: Beat 2 eggs, stir fry pan hot cold oil 80 percent, add egg and scatter until cooked. (Yellow) ●	excited	excited
Step 3: Heat up the oil in the pan and add the onion, ginger and garlic to fry, then add the carrot and stir fry; then add the fungus and stir fry; then add the cucumber slices and stir fry. (Blue) ●	warm	calm
Step 4: Finally, add eggs and stir-fry; then add salt, sugar, stir fry evenly, pour in sesame oil and stir evenly, then you can get out of the pan. (Pink) ●	excited, happy	happy

Figure 4.3 test of recipe C and recipe D

living environment. Participant B's parents cooked it for her when she was young. Oppositely, Participant A was born in a very poor age and the only food he can get was vegetables when he was young, so instead of vegetables, he prefer meat and fish now. Participant E also mentioned that she doesn't like eating fish anymore, because eating too many seafood at home, however she doesn't like eat meat either because she wasn't allowed to overeat meat when she was young.

Although nowadays people can learn recipes online from strangers, family recipe still have its own attraction. During the actual cooking process, their are still some special cooking technique which makes family cuisine unique. Participant B and C choose ingredients very carefully. Participant A boil the meat first to remove the original smell of pork. He also take great care cutting the pork into pieces in

case it shrinks after being cooked.

Colors can both affect and represent the users feeling during the cooking process. Colors choices are based on the nature color of food, green cabbage, bright orange fire, yellow oil.. or the environment around him. With the proceed of cooking, the color which can represent personal feeling also changes. Different cooking process brought various feeling to the cook. Participant D think of green while preparing the ingredients. She think of yellow when frying vegetables in the fry pan. When she finished cooking and start putting food into plates, she think of Pink.

When participants see the same colors they will naturally associate with the feeling experience related to these natural objects. Participants have similar feelings with the same color. People have similar feelings with the same color. Participant B and D both choose green to represent the freshness and healthy feeling. Participant A and D both choose Pink to represent happiness and gentleness. Participants E who read their recipe and color choices have the same feeling with the color choices. She feel calm, water and peace thinking of color blue as participant C does. She feel happy and loved thinking of pink as participant . She feel warm and energetic thinking of yellow as participant B felt. Color is a very efficient way to create same ambient as well as expressing feeling in sharing cooking experiences

The cooking sound itself leads to homesickness while the light changes can bring comfort to loneliness. Participant E said the sound remind her of so many precious memories with family members which make her feel relaxed but depressed. Nevertheless, the colorful light create a vivid ambient around her which make her feel being accompanied.

4.4. Evaluation of Interface and Function Design

The user experiences of the function and interface design was tested by survey and interview in the same family.

None of the participants found the app difficult to use. However different generation have different feelings. The younger the participants are, the easier it is. Participant A and B who are the eldest needs some detailed instruction. Participant C and D can get used to it without any instruction. Participant E found it is extremely easy to use due to the similar function as other app.

Four of the participants feels it is extremely easy to access to the homepage. Participants A didn't know how to scroll the recipes to the bottom, while the rest participants think it is clear and easy understanding.

People with less experiences in app may find there are some difficulty in uploading the recipe. In PUKU ,users need to record their cooking sound and select colors which can represent their cooking experiences, Participant A had some problems return to the formal pages. However, participant B who likes using smartphone and ipad easily understand how to upload the recipe.

All of the participants think it is very simple to check and read the recipes. Participant D mentioned he really liked the weekly choices on homepage, and he really likes the simple design of pictures instead of words.

All the participants think there is no significant difference in chatting page. All of the participant had the experiences of using online communication tools such as "Wechat" or Instagram. However,Participant A explained that he had little experiences texting with smartphones, which makes it a little bit difficult for him.

Participants have some problems understanding the multiple functions of personal page and it takes 15min for him to get familiar with it, and to remember the flow. Participant B and D found it is very easy and Participant C and E found it is extremely easy to use.

The most popular and welcomed function is searching family recipe. Participant C and D mentioned they usually called their parents to learn and check family recipes but now they can easily learn it from PUKU. Participant E said she always miss family dish living in another country. Participant E is the only one who did the user test along with the device. She really enjoyed the function of playing with PUKU in this part. The cooking sound and shifty light let her imagine how her family members are cooking in the kitchen and it reminds her of many family memories. It help me feel accompanied and it really feels like surrounded by family members.

The Second most popular function is Chatting. Participants B explained that after reading the recipe she really wants to discuss about it with other family members. The only participant who is living alone , Participant E rarely contact with her family but every time hearing the familiar cooking sound she became homesick and eager to talk to her family members.

All of the five participants agrees that it very easy to understand how to use this app and finding information.

There are three main goals of PUKU– to improve family communication within different generation by sharing cooking experiences, to learn more family recipe and keep family traditions and to reduce the loneliness of family members who is living alone.

According to participants A and B, they used to contact with their grand children participant E once a month but after the test, they received a photo of the dongporou she cooked. They always worry that participant E doesn't eat well when living by herself, but now they feel relief. Participant C and D also contact their daughter, Participant E to share recipe and other living tips with her. They said usually they just contact her daughter to make sure she is safe, but now they found another good topic to talk with each other which is not too personal and annoying. They are always afraid to interrupt her life or making her feel too much stress talking with them.

Participant E feel the app is a great way to learn about family recipe. She grew up with her grandparents and she is very interested in listening to their family stories. Family recipes reminds her of all those precious time she spent with her family when she was young. Participant also mentioned that although she also had experiences learning some recipes online, there are still differences in the taste. She thinks it is a very good way to preserve family dish and she would like to share it with her children someday in the future. Participant E is the only family member with the device. She really enjoyed the cooking sound and colorful lights. The cooking sound make her feel surrounded by family members, while the light changes help her share the same mood with her family members in each cooking step.

Chapter 5

Conclusion

5.1. Validation of Concept

Sharing cooking experience can help improving inter generational interaction and closeness and reduce individual loneliness for international students. Because of different education and social background, different generation sometimes lack communication over other personal issues. Thus, an internal communication tool customized for family members is necessary. Many Chinese oversea students growing up without cooking or other living skills. The best teacher in real life is their parent. They can have further understanding of their parents through communication in this app instead of keeping their parents away from their other social media accounts. It also reminds them of the precious time they spent with their family.

Coloring light is a effective way to create a ambient in personal living space as well as a unique tool to evoke moods and feelings in sharing cooking experiences. Although color is an objective product that exists in the natural world and is a physical phenomenon, humans have interpreted the different feelings brought by color from long-term life experience. However, family members are different, they spent a lot of time living together, and share same life experiences for a long time. Our preference for color is a judgment made after thinking. When light of different wavelengths is accepted by our eyes, the light stimulates the brain through the retina, allowing us to look for similar experiences in memory and produce mutual recognition. Things, and finally make a choice. The process is also affected by many aspects.

Sound is another way to help people relax. Cooking procedure including various kind of sound which brings different feelings to people. Cooking sound recorded by family members can remind users of the precious time they spent with their family

members. Also cooking audio includes many lower-pitched sound such as boiling water, which can stimulate parasympathetic nerve. If the sympathetic nerves in the autonomic nerves are more active, then blood pressure will rise. Conversely, if the parasympathetic nerve is active, blood pressure will drop. These sounds not only stabilize blood pressure, breathing, and heartbeat, but also suppress anxiety and irritability.

5.2. Possible Future Work

Firstly, the visualization design should also be customized. The interface should be personalized and customized for each member because our user target covers different generations. It is essential to let them choose their font size and background color and other functions.

Apply multiple communication tools into PUKU because some participants cannot find it difficult texting with others. Moreover, how to attract seniors to use PUKU remains to be a problem. Maybe we can apply some exercising game into this app as well.

Thirdly, the interaction between app and device can be more complicated. eg: other family members control it remotely. Meanwhile it is also necessary to find a way to increase the quality of audio materials.

Last but not least, recording stories related to certain family food is another essential function that should be added. Each family dish has its own history background. Nowadays there is a new way to collect history materials which is called oral history. Recording our family history can also help with understanding certain generation as well.

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Appendices

A. Interview materials

A.1 Participant A

Family Identity

Grandpa

Observation

Participant A (grandfather) cooked a meat cuisine called Dongporou. He pays great attention while cutting pieces of braised pork in case it is not too small because the cooked meat will shrink nearly twice. Before stewing the meat, he put it in cold water and wait until the water is boiling to get rid of the unpleasant smell of meat. He also carefully checked the taste before adding the salt. Dongporou should be salty with a slice of sweet. He took great care of adding salt and soybean sauce in order not to cover the sweetness itself.

Recipe

Ingredients: pork belly, soy sauce, star anise, ginger, pepper, sesame oil, rock sugar, garlic, salt

Step 1: Prepare materials, wash pork belly, and cut into mahjong pieces; (Pink)

Step 2: Heat the pan and set the sesame oil, saute ginger slices, garlic, pepper and star anise; (Yellow)

Step 3: Pour pork belly and stir-fry until slightly charred on both sides, add cooking wine or liquor, soy sauce, rock sugar; (Orange)

Step 4: Transfer to a casserole and add appropriate amount of boiling water, simmer for one hour on low heat, pay attention to turning over frequently, on

the one hand, evenly color, on the other hand, avoid pigskin sticking to the pot. Sprinkle some pepper and salt just before leaving the pot. (Blue)

Step 5: Put it out, set it up.(Pink)

Interview

1. Why choose this recipe? Answer: Because it is a representative dish of my family cuisine. 2. What does this dish mean to you? Answer: It is a special family dish I cooked for my family members on traditional festivals. it always remind me of the time I spend with my family. I've been living in Canada for over 10 years. Ever since i moved here, it becomes very hard to get together with my family. 3. Color changes in your mind? Answer: Green—Yellow—Orange—Blue—Pink 4. Why did this change happen? Answer: I feel very peaceful while cutting.The oil is yellow and i feel delightful. The warm fire remind of the color orange. Hearing the boiling soup sound always make me feel clam and peaceful which makes me think of blue.I feel delight putting them into dishes. 5, On what basis did you choose the color? Answer: Based on the color of the food.

A.2 Participant B

Family Identity

Grandma

Observation

Instead of using tofu, She used frozen tofu which becomes more juicy after stewing with Chinese cabbage. This is how she cook for her family before. she fried the cabbage slightly with hot oil first which is different from other people. She didn't add any other ingredients such as soy sauce, soy sauce, oyster sauce except for the salt. Then she stewed the tofu for more than 15 minutes.

Recipe

Ingredients: tofu (14 photos) 500 g, Onion ginger total 30 grams, Vegetable oil 50g, Salt 3g, MSG 5g, green onion 5g, ginger 5g, chicken essence 2g

Step 1: Cabbage and tofu are properly cut into pieces, minced ginger and shredded onion. Cut tofu into small pieces and cook in boiling water;(Brown)

Step 2: Wash the Chinese cabbage and cut it into segments, put it in the tofu block pot, cook it and pour it out; (Green)

Step 3: Heat the pan, put an appropriate amount of oil, add onion and ginger and saute, add cabbage and fry slightly; (Yellow)

Step 4: Put the pot on a high heat, add vegetable oil to heat, fry the onion and ginger, add the broth (400 grams), salt, tofu pieces and cabbage;(Orange)

Step 5: Stew until the cabbage and tofu pieces are integrated, sprinkle with MSG and chicken essence. (White)

Interview

1. Why choose this recipe?

Answer: It's a dish I learnt when I was very young. It came up right to my mind when you mentioned family recipe.

2. What does this dish mean to you?

Answer: Home, and childhood memory, it has been through my whole life I guess.

3. Color changes in your mind?

Answer: Brown—Green—Yellow—Orange—White

4. Why did this change happen?

Answer:Cutting Chinese cabbage is a very slow and steady process, that's why I feel brown. I feel very healthy when seeing the color of cabbage in the fried pan. Seeing the heat and oil makes me feel excited to start cooking, so it's yellow. The heat reminds me of fire that's hwy it's orange. The white soup is the soul of this dish, it's very tasty.

5, On what basis did you choose the color? Answer: I didn't think twice while writing down those colors. Maybe it's instinct or influenced by the environment around me.

A.3 Participant C

Observation

He cooked a family dish—fried Chinese hairtail fish. He put all the ingredients into a freshness protection package and the put in the fish. He expelled all the air and sealed the bag to marinate the fish for 3 hours. He used a special pan for frying fish tools, which is simple and easy to use, and the temperature is better controlled. He turns the fish frequently during the frying process.

Recipe

Step 1: Wash the fish and cut into sections; shred ginger; wash onion and shred. (green)

Step 2: The cut fish is marinated in salt, soy sauce, with cooking wine, ginger and green onion. (blue)

Step 3: Wrap the octopus with a layer of flour, slightly shake it off a lit it, and place the fish on a plate. (white)

Step 4: Heat the frying pan, and add oil then fry the rare fish until it turns golden on both sides. (yellow)

Interview

1. Why choose this recipe?

Answer: Because I live in a seaside city, I like seafood, and food is easy to buy.

2. What does this dish mean to you?

Answer: It is a nutritious dish which I used to cook for my family. I always cooked it for my daughter when she was in middle school. My family members like to eat it.

3. Color changes in your mind?

Answer: Green—Blue—White—Yellow-

4. Why did this change happen?

Answer: It is based on the characteristics of the ingredients and the color change of the ingredients in each step of the cooking process.

5. On what basis did you choose the color?

Answer: In the process of preparing ingredients, I thought of green, because the fish are from the ocean and is a pollution-free food. During the pickling process, I thought of blue, because this is the color of the sea, the sea is very salty and calm; when coating the fish with a layer of flour, I think of white. it is a very peaceful feeling; When it comes to the cooking process In the middle, I thought of yellow. The fried octopus is golden on both sides, which makes the appetite greatly increased.

A.4 Participant D

Observation

First she rinses the fungus with water, wash it very carefully, remove the hard underneath, tear it into small flowers by hand, beat the eggs and set aside. Before frying she blanch the fungus with boiling water until it's cooked. Then she pour a little oil in the hot pan, spread the eggs and cooked them first. Then she pour a little more oil in the empty pot and put her hand near the fry pan to feel the heat of the oil. When she feel the temperature is high enough. She puts the fungus carrot and stir fry. After seeing the fungus have a shiny luster, she puts in the egg. Then Continue to stir fry a few times, add salt and pepper, stir-fry evenly, and take out.

Recipe

Ingredients: 180g cucumber, 50g carrot and 30g pepper. The fungus hair is washed and the root pedicle is torn off.

Step 1: Prepare the ingredients, cut the vegetables. (green)

Step 2: Beat 2 eggs, stir fry pan hot oil cold oil 80 percent, add egg and scatter until cooked. (yellow)

Step 3: Heat up the oil in the pan and add the onion, ginger and garlic to fry, then add the carrot and stir fry; then add the fungus and stir fry; then add the cucumber slices and stir fry. (blue)

Step 4: Finally, add eggs and stir-fry; then add salt, sugar, stir fry evenly, pour in sesame oil and stir evenly, then you can get out of the pan. (Pink)

Interview

1. Why did you choose this recipe?

Answer: Because I pay more attention to nutritional balance in my diet.

2. What does this dish mean to you?

Answer: Because this dish has both protein and multi-vitamins, it better explains the healthy eating concept that I want to bring to my family-daily diet should be nutritionally balanced.

3. Color changes in your mind?

Answer: Green—Yellow—Blue—Pink

4. Why did this change happen?

Answer: This change occurs due to the nature of the ingredients and the natural sensibility of the cooking steps.

5. On what basis did you choose the color? Answer: According to the characteristics of the selected ingredients and the sensibility in the cooking process. First of all, Since all the ingredients are organic vegetables, I think of green. When scrambled eggs, I naturally think of yellow. When all the ingredients are fried in the pan, I have a imagination of the finished nutrition and color and fragrance of this dish, which is blue. Finally The tempting dishes that come out of the pan also better explain my gentle diet concept-nature is pink.

A.5 Participant E

Interview

1. What do you feel when you first see those recipe?

Answer: I feel home and I really miss my family. Those are very familiar dishes I had with my family members in our daily life. Especially those cooked by my grandmother and mother.

2. Does it remind you of any family memories.

Answer: Yes, of course.

I was brought up by my grandparents before I go to middle school. My grandpa really likes cooking braised food with soy sauce. I was very thin at that time, so he cooked a lot of meat for me everyday. My mom is very unhappy with that though. Dongporou is a representative family dish cooked by my grandfather, he

always cooked it on festivals such as Spring festivals. I wasn't allowed to eat too much meat except for certain days. In fact all of our family members can cook Dongporou including my uncles. They learned from my grandpa but the taste is slightly various from each other.

My mom is very strict with our family diet, especially after i went to middle school. Every dish she cooked is balanced in color , nutrition and taste and I really appreciate it.

To tell the truth I never saw my grandma cooking when I was young because the kitchen always belongs to my grandpa at that time. Chinese cabbage tofu is a very traditional dish in the northeast of China where I was born. It is simple, delicious because we had so many different kind of delicious tofu and very juicy Chinese cabbage due to the long cold winter in my hometown. The first time I ate this dish cooked by my grandma was after their moving to Canada. I have already become a college student at that time, and my grandma told me that my grandpa finally allowed her to enjoy cooking because there are only two of them there. She became so obsessed with cooking and showed me her secret book with different recipes she learned from TV programs, articles online or her friends. It is really amazing to see how many new dishes she has learned in her elderly life. I usually worried that she may feel lonely living in Canada because you can really see a living person there, but now i feel relief because she find a new hobby which can fulfill her free time.

My dad doesn't cook so often and he never ate any sea fish. But he loves eating Chinese hairtail fish. I usually got fever when I was young. Every time I'm sick, the only thing I can eat is porridge. My parents always cooked Chinese hairtail fish for me because it taste great with porridge.

3. What do you feel listening to the cooking audio recorded by your family members? I enjoyed the sound of cutting vegetables most. I can imagine how my family members are cooking in the kitchen and reminds me of many family memories. I feel really warm-hearted and well protected listening to those sound. Not all of the sound are pleasant and relaxing but it really help me feel accompanied and it really feels like surrounded by family members.