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Helping office workers to prepare quick and health meals

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R.I.T

Helping office workers to prepare quick and health meals

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Thesis

Master of Fine Arts in Industrial Design

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ABSTRACT

Staying healthy at work is crucial to increase a wellness culture during the workday and can further help maintain the health of employees and employers both physically and mentally. Balanced eating is one of the most significant factors in maintaining good health. This thesis proposes a foldable cooking table top with an installed induction cooker. People can prepare and cook food on it cooperatively with a due division of labor in the office. Cooking in groups at the office provides opportunities for social engagement while making healthier meal choices. The proposed cooking table offers flexible interactions during cooking, dining, and social life. Office workers can cook together while sharing the room around the table recreationally and communicating with each other. By using soup as the entrée, people are easily attracted by the aroma of it and willing to join. Moreover, soup is healthy and easy to cook. The integration of soup and the proposed cooking table allows office workers to cook quick and healthy meals collaboratively.

KEYWORDS

Office, cooking, healthy, wellness, social life

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1 INTRODUCTION

The purpose of this table design is to explore the psychology, nutrition, and behaviors that influence people's cooking habits. Recently, all sectors of the community are paying increasingly more attention to the health of office workers in order to improve their quality of life during a busy workday. This study seeks to answer the following research problem: how can office workers prepare quick and healthy meals? The goal is to support the ideation of designing a smart kitchen system for office workers to cook at the office and enjoy their fresh meals.

1.1 Problem Statement

How to help office worker prepare a quick and healthy meal?

1.2 Project Rationale

Staying healthy at work is important to increase a wellness culture during the workday. It can also help to keep better physical and mental health for both employees and employers. Balanced eating is one of the most significant factors in maintaining good health. However, recent research shows that only 25% of office workers in the U.S. report eating five servings of fruits and vegetables every day. Most individuals do not plan ahead, cook at home or bring food to the office. This phenomenon is caused by many reasons. First, office workers enjoy socializing with co-workers by eating out during lunch time. In addition, some of them do not realize that there is a big difference between food served at restaurants versus home-made food in terms of ingredients and calories. Moreover, meal planning, food preparation, and grocery shopping takes time. After 8 hours at the office, cooking food may not seem worth the effort. The foods we eat affect us more

than we may realize. Some studies even indicate that cooking at home five days a week could add 10 years to our lives [2].

Fortunately, more people nowadays prefer cooking at home instead of going out for food due to a growing awareness of health. Hence, this table design concept helps them to prepare quick and healthy meals during their busy work life.

2 LITERATURE REVIEW

It was important to research in various areas during the design process. For this project, which is about helping office workers prepare quick and healthy meals, the designer should focus on the psychology aspect of the office workers and figure out why they choose not to cook. Nutrition and other related areas are also important. All these ideas are mentioned in the following discussions.

2.1 Staying Healthy at Work

To many, staying healthy at work is a common topic. People seem to overlook it and may deem it as unimportant. However, staying healthy is significant for both office workers and the company. A positive wellness culture during the workday can help keep better health both physically and mentally for employees and employers [3]. In recent years, products like Apple Watch, Fitbit fitness wristband, and MyFitnessPal App, which can count steps, monitor heart rate, and even track sleep quality, may help people get in shape and be healthier [4][5]. According to [6]: “Health Fitness Watches are becoming a regular part of the keep fit accessory world for anyone who is serious about health and fitness”. The emergence of these products may indicate that people are care more about their health and willing to buy health products to stay fit.

People spend most of their waking hours in the workplace. There are several tips for people to improve their health: never skip breakfast, break up the work day, eat better, make hydration benchmarks and optimize the workspace [7][8]. Based on these simple and practical tips, it is easy to conclude that having a balanced and varied diet is indispensable for keeping healthy. This has the makings of a platitude, but most of them have not started to cook and eat fresh, nutritional meals.



Figure 1

The existing products, such as OrangChef, Meld cooktop, and Paragon offer great convenience, relief, and independence with cooking. However, good eating does not mean perfect eating. It is all about making better choices [9][10][11][12].

It is important to find out why individuals do not want to cook so that we can figure out those problems more efficiently. In the first place, people who do not have good experience in cooking, may not know what kind of materials should buy and feel confused when they go to the supermarket [13]. Additionally, people would like to eat outside to socialize with their friends and colleagues. Dinner time is a great way to contribute to the growth of friendship. What's more,

some people think eating a hamburger at a restaurant is the same as eating one at home. However, there exists a big difference between them. Authors in [14] report that: “The calories you consume when eating at a restaurant can be staggering”. People can live a healthier life by preparing meals with whole grains, olive oil, fresh meat, and vegetables. Cooking at home could save money and allow people to celebrate with friends and family as well. People who think they are healthy do not care about eating better; they are not even be healthy. In the end, there are people who think that cooking for one is not worth the effort [15].

2.2 Psychology of Cookware Design

After analyzing why some people do not want to cook, we should focus on how to come up with a good product which can influence them both physically and mentally. In a recent study, Baltazar & Amanda point out that there are increasingly more consumers who would like to cook by themselves. The consumers lack the knowledge of cooking as well as the usage of cookware. Thus, a set of utility cookware is useful and important for people. The authors also pointed out that the happiness of cooking is a distinctive view for marketing cookware [16]. For the emotional design portion, Obal, Damjan & Emilija Stojmenova designed a kitchen which is full of humanness to test their new design methodology. They integrated kitchen users into the kitchen interaction design and fruitful participatory design successfully by using the EPUI methodology, which they came up by themselves and worked very well. This method consists of four parts: exploration, participation, understanding, and integration [17].

2.3 Nutrition

Considering the nutrition aspect, there are various meals and eating habits in the world. According to [18]: “While national obesity rates depend on many factors, they probably have a lot to do with lifestyle and culture, including what people eat and how they eat it”. For example, in Japan, people use small portions and colorful, seasonal vegetables, which provide a range of healthy vitamins and minerals, in order to control calories. Research also shows that Chinese people eat slowly and decrease the amount of food eaten by using chopsticks. Furthermore, one study found that France has lower rates of obesity and cardiovascular disease than the U.S. In Italy, people usually have a glass of wine per day which can possibly increase longevity and reduce the risk of cardiovascular disease [18] [19]. During the design process, the designer should consider various eating habits and cultures around the world, which can bring some amazing ideas.

The purpose of this project is to help office workers have healthy meals. Based on a lot of research, eating fresh food which is cooked the same day is significant for a healthy meal. Authors in [20] report that: “Produce actually loses its nutritional value over time, so the quicker it’s eaten, the more nutrients that can be gained from it”. Also, fresh food tastes better!

2.4 Design for Social

Socializing with co-workers and having a good time at the office play an important role in daily life. There are a lot of ways for people to walk the fine line between fun and party-hardy, and between colleague and friend, such as saying “yes” even if you do not want to, or establishing their own circle and having a good lunchtime together [21] [22].

Office workers often use lunch time for socializing. It will be great if the designer can consider the social part in this project. Although designing products is relatively easy, making a

meaningful impact is hard. According to [23]: “Meaningful social impact is the degree to which they are able to change people’s lives for the better – and that means something like ‘years of life improved’”. It is easy to design cookware for office workers, but it is hard to make it a habit for long time use.

2.5 Discussion

As discussed above, it is necessary to create some actual ways to encourage the intrinsic motivation and identity of cooking in the office for office workers. Based on the problem statement in Section 1.1, the cooking system for office workers should be friendly and easy-to-use so that it is likely to appear in their daily life.

3 DESIGN METHODOLOGY

The design methodology is listed as follows:

1. Research at university’s offices which is the most convenient way. Observe individual’s working habit and do surveys with them about why they do not want to cook and how long they usually cook.
2. Interview the future users who work at a typical office. Talk with them about the inconvenience and their needs while they are cooking. What’s more, do the same survey at university’s officers.
3. Do surveys with the office leader. Talk with him/her about the company policy of cooking at the office.
4. Interview with psychologists about the emotional and psychological factors of office workers. Discuss how to make the office worker feel optimistic. Questions should be raised

like: What kind of color can make people feel happier? Are there any points for attention while designing products for them?

5. Talk with dietitians about how to make healthy meals. For example, what kinds of nutritional foods do they think are easy to make?
6. Talk with chefs and those who like to cook about some useful cooking experiences. For instance, what should we pay more attention to during preparing food?
7. Interview designers who have experience in cookware design.

The survey for office workers should be raised like the following:

1. Are you working now? Have you worked before?
2. Do you cook often? How often do you prepare a meal?
3. Does your office have a lunge or a small kitchen?
4. Do you enjoy cooking? Which part do you like best? Which part do you hate most?
5. How long do you usually cook?
6. How long do you think is appropriate? How long will you prefer to cook by yourself?
7. What kind of food do you like? What kind of food do you eat usually?
8. Do you like eating at restaurants? Why?
9. Are you eating healthy as usual? What kind of food do you think is healthy?

The product design requirement is listed as follows:

1. Age of audience should be around 22~55 years old.
2. Test different shapes of table tops to find the most social and convenient ones.
3. Test various materials to find the appropriate one for the product.

4. Test different types of 3D printings to decide which one is useful for the final model.

4 PRODUCT DEVELOPMENT

4.1 Product Concept Ideation

Based on previous research, most people think that they are tired and did not have enough time to cook a meal after working all day and bring it to their office the next day. I came up with some ideas which are focused on quick cooking, nutritional recipes, and socializing. The following pictures are the early concepts.

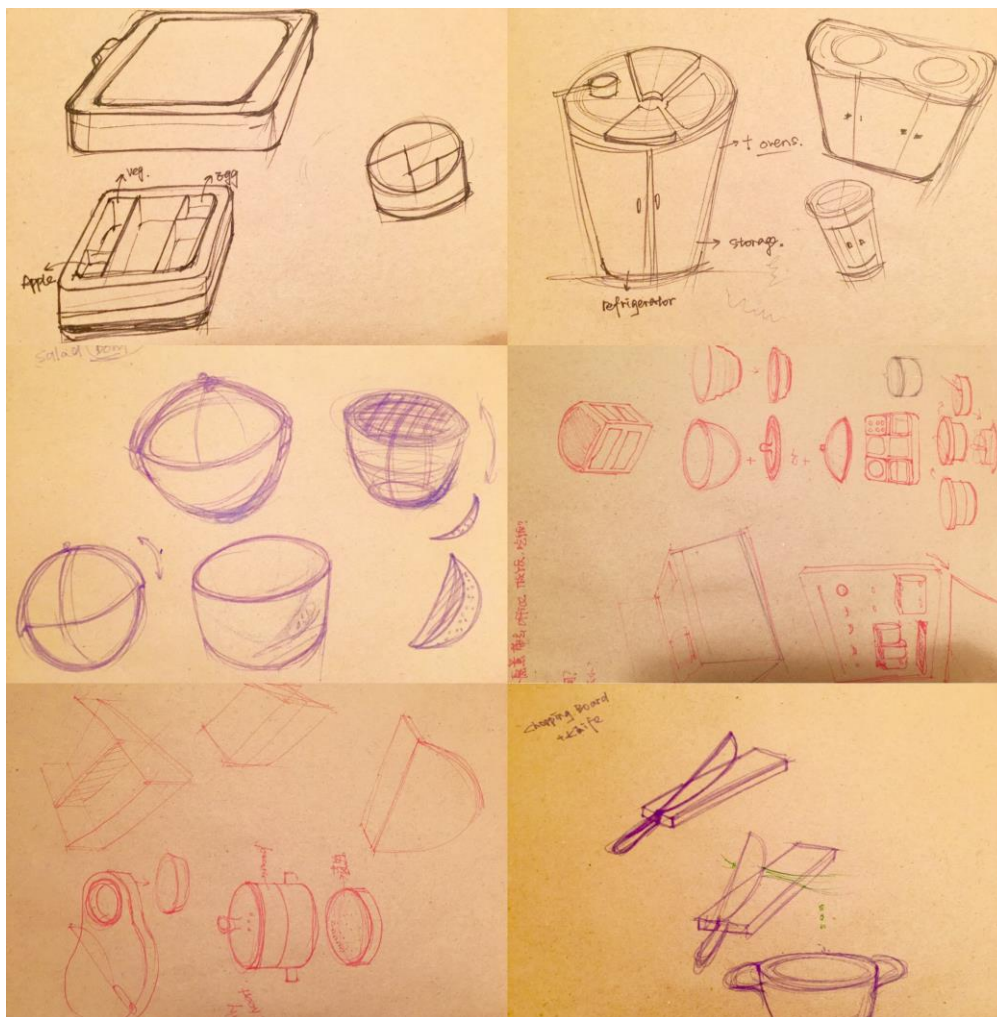


Figure 2

The first concept is a cooking box which included a chopping board and a kitchen knife. The cooking box also has a set of drawers which store the cooking utensils and sort the different food materials. The cooking box should be portable and easy to store.

The second concept is a multifunctional kitchen cabinet. People can prepare, cook, and wash on this cabinet. The cabinet will have a refrigerator and some storages as well.

The third concept is a cooking tabletop with an induction cooker which can be folded easily. People can prepare and cook food on this table in the office. It is easy to open and store.

4.2 Initial Design

My initial concept is to encourage people to cook in cooperation with a due division of labor in their office. Also, I would like to use social relations as the motivation to let them break up their work day, stand up to cook, and have fun with their colleagues. Usually, people who cook by themselves may take 40 minutes to do so. If, however, they cook with other 2 or 3 co-workers, it may only take 20 minutes in total. In the meantime, they can socialize with their colleagues. By doing this, they may get in a good social relationship with each other, which may further strengthen the social cohesion of the company.

My design is a smart kitchen system. As can be seen from figure 3 & 4, there is a tabletop with an induction cooker installed at the center. People can put their pot on it and cook their soup. The space around the induction cooker is for preparation of cooking materials. There are three different aspects of the cooking steps, namely cutting vegetables, cutting meats, and preparing the

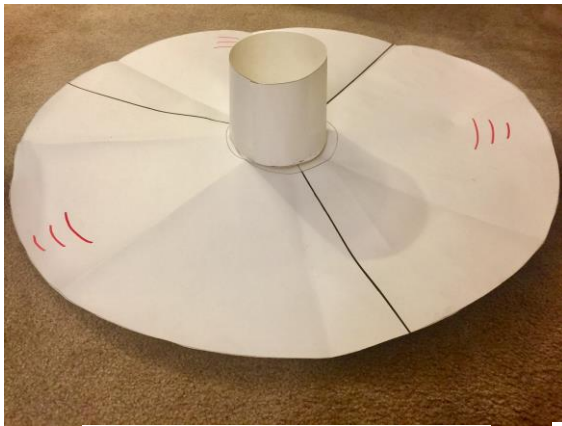


Figure 3

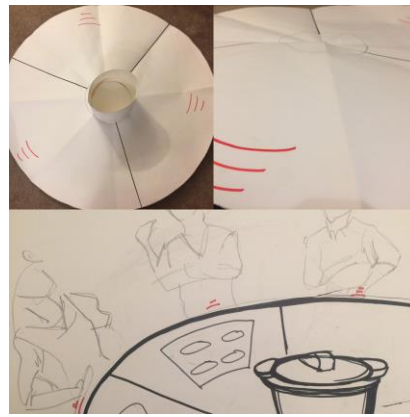


Figure 4

dressings and sauce. Each area of the table top is equipped with an infrared sensor which can sense whether there is a person standing in that area and can further send the signal to control the heat power. For example, if there is one person standing in one of the three areas, the power level would be “small heat”. If there are two people standing in two areas respectively, the power level would be “moderate heat”. Three people standing by the table would have the highest temperature correspondingly. When people use this product, there must be three or more persons to finish the cooking. It is very hard to cook independently. In addition, cooking together will be interesting. When people need the small fire, two of them need to keep away from the table top. It is kind of like a fun game for office workers to enjoy their cooking time.

This tabletop can be folded which makes it easy to store. Here are some examples of the storage, such as square, triangle, and circular. Each of them can be folded in different ways.

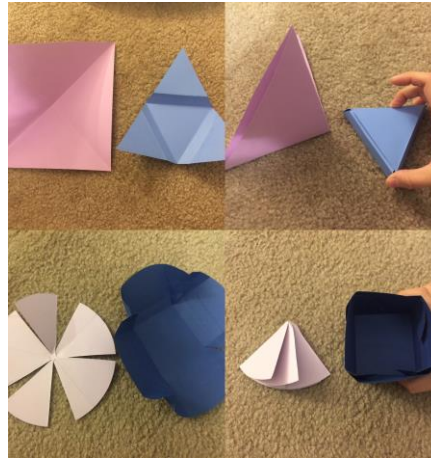


Figure 5

4.3 Concept Development

The concept of this design is to encourage people to cook in cooperation with a due division of labor in their office. My design is a smart kitchen table. People can cook their soup on it. The space around the induction cooker is for preparation of cooking materials.

In the process of concept development, the idea of more people equaling more heat has been taken out and replaced by the new idea of the “Lazy Susan”. People can prepare and cook food together in the office lunge by using this roundtable for their soup. During the preparing process, they can spin the table in order to get some help. This way, the cooking process will be more interesting, and it also can improve the interaction between colleagues.

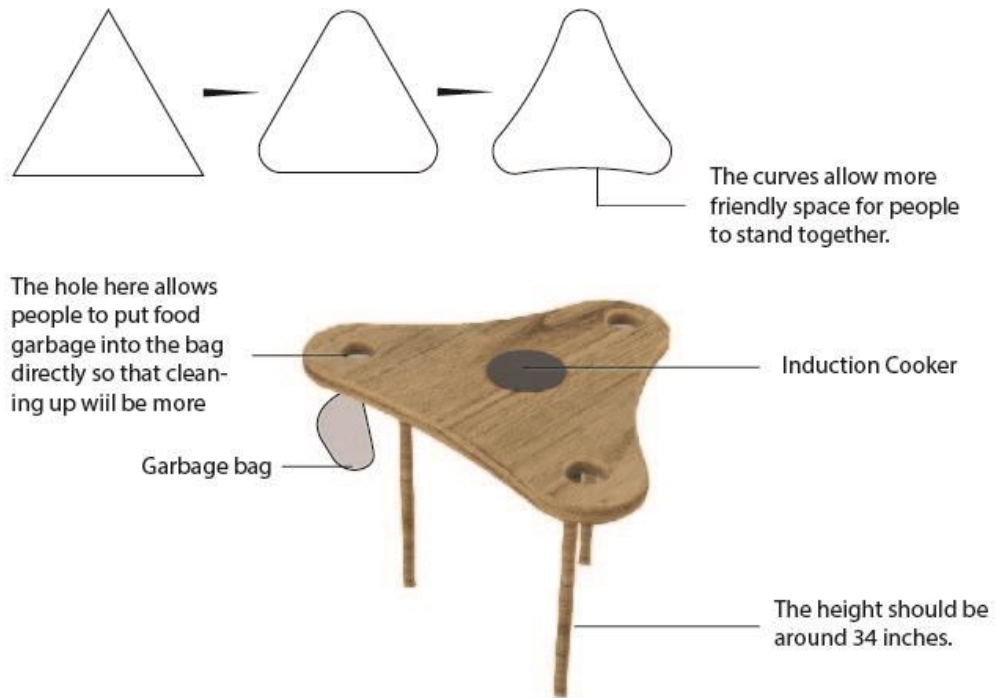


Figure 6

For the type of food, I choose soup as the entree instead of sandwiches and salad because of the following reasons. First, I assume the aroma of the soup will attract people because soup often smells good while being prepared. When someone is cooking, others will smell it and they may be willing to come, cook and eat together. If they do not have time to cook on that day, they may still cook the day after or the next week. I hope this product will have a long-term influence on them and will help them to build better cooking habits. Also, soup is easy and fast to cook, needing only a few ingredients and sometimes only 20 minutes of preparation. Moreover, soup is healthy. Any meat or vegetables can be added in it. Some traditional foods need to use oil and a lot of salt to increase the aroma. Soup, on the other hand, needs only a few sodium and does not need oil. It boils the aroma out of the ingredients. Lastly, there are various kinds of soups in different countries, such as chicken noodle, borsch, curry soup, etc. Different soups have different fragrance. People can learn other cultures from the soup. Last but not least, people can customize

their own soup. Something magical may happen if different ingredients are mixed. Probably, some new fragrances will be found. Mixing different ingredients and trying to find new fragrances are also fun for workers during cooking, which further helps them relax during lunch break.

4.4 TESTING

4.4.1 Human Testing A

Testing product: Cooking Table with induction cooker

Testing location: Studio & home kitchen

Testing procedures:

1. Four people preparing food together in a small room which is similar to the lounge in an office.
2. Using this roundtable to prepare food material which is for their soup, such as carrots, potato and so on.
3. Trying to spin the table to others in order to get some help for preparing.



Figure 7

After testing this cooking table, there remained four problems:

1. The shape of this roundtable is not appropriate for preparing food. Food often falls down when people are cutting during the testing, because there is not enough space.
2. The idea of the “Lazy-Susan” does not work very well. Most of testers think spinning the table during preparation is not very convenient or safe.
3. The height of this table should be higher.
4. It should be easy to clean up.

There are three solutions:

1. Change the shape of the tabletop.
2. Get rid of the concept of the “Lazy-Susan”.

3. Increase the height of the table.

4.4.2 Human Testing B

Testing product: Cooking Table with induction cooker

Testing location: Studio & home kitchen

Testing procedures:

1. 3~6 people prepare food together in a small room which is similar to the lounge in an office.
2. Using this table to prepare food material, which is for their soup, such as carrots, potatoes and so on.

The problems of this table:

1. The distance between the garbage bag and preparing area is a little bit far away. Also, the hole is too small.
2. The induction cooker is too close to the preparation area, which is dangerous especially because the pot is hot during cooking.
3. The tabletop is always wet when testers are preparing food, which is not safe because of the induction cooker.
4. The kitchen knife on the table is unsafe and sometimes it may fall down carelessly.
5. The table does not have storage for people to put some plates or salt and pepper.

The four solutions:

1. Cut down the length of the table and enlarge the size the hole for a garbage bag. Add a cover on the hole so that people can choose to use it or not.
2. Add more space between the induction cooker and preparation area.

3. Add a water channel around the induction cooker in case that the water comes near it. Add edges around the table and add some inclinations on the table that allow water flow to the garbage hole.

4. Add a special area for kitchen knives and other sharp cooking tools.

4.5 Material Testing

Material Testing

	Light weight	Easy-cleaning	Suitable in the office	antibacterial property
Plastic	●	●	●	●
Solidwood			●	
Plywood	●		●	
Marble		●		●

Figure 8

Based on the material research and testing, plastic is more appropriate for this cooking table, because it is light, easy to clean, suitable for the office, and has antibacterial properties.

4.6 Final Design

The final concept of this design is to encourage people to cook in groups at the office, providing opportunities for social engagement while making healthier meal choices.

My design is a foldaway cooking table with an induction cooker. People can cook their own meals together at the office, such as soup. The space around the induction cooker is used for preparation. This cooking table provides a flexible interaction among cooking, dining, and social life. It also provides an opportunity or place for workers to rest and communicate with each other. The table is made out of plastic, with legs of coated steel metal.



Figure 9

The tabletop is triangular with curves that allow for more friendly space for people to stand together. The table's white top looks clean and tidy. A yellow strip on the edge and legs brings optimism.



Figure 10

The color yellow has also been found to provoke appetite because it is associated with happiness. Holes in the table allow people to put food garbage into the bag or a trash can directly so that cleaning up will be easier.



Figure 11

5 CONCLUSION

To sum up, helping office workers cook at an office is very necessary and helpful for the users. We proposed a foldable cooking tabletop with an induction cooker installed to support the ideation of designing a smart kitchen system for office workers to cook at an office and enjoy their fresh meals. The proposed cooking table provides room around the table for workers cook together,

communicate, and relax. Moreover, cooking at office by themselves can bring lots of convenience, pleasure, and even can improve their work efficiency. They can eat various healthy foods and enjoy a fine time during a busy workday. We use soup as our entrée. The aroma of soup can easily attract people to come and cook together. Soup is also healthy and easy to cook. Workers can also add a variety of ingredients to soup, which guarantees the fragrance as well as the nutrition. Additionally, soup has low oil and sodium, which is another sign of healthy food. Utilizing the proposed cooking table, office workers can collaborate to cook a quick, tasty, and healthy meal together.

The idea of this cooking table still needs some improvement. For the folding method, there should be an easier way to fold it. It needs more safety considerations due to the company policy as well. From the above, there are more developments will be figured out in the future to design a brilliant product for users.

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