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FlavorConnect

Fostering Remote Intergenerational
Relationship and Recipe Sharing Through Smart
Culinary Set



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Title
FLAVOURCONNECT
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PART ONE

Abstract & Introduction

1.1 Abstract

This thesis investigates the multifaceted challenges and opportunities arising from the global demographic transition towards an aging population, with a particular focus on the context of China. Within this demographic shift, a substantial proportion of older individuals remains in good health with normal mobility, yet often find themselves excluded from active participation in society, lacking products and services tailored to their unique emotional and lifestyle needs. This situation leads to feelings of isolation, loneliness, and age discrimination, adversely impacting the mental health of older adults.

Furthermore, the importance of intergenerational relations is emphasized, with a specific focus on interactions between older and younger generations within families. Good intergenerational participation is identified as a means to bridge generational gaps, providing emotional support, reducing loneliness among older individuals, and facilitating the exchange of experiences, resources, and knowledge in a mutually beneficial manner. Such engagement also involves older individuals contributing to the growth and development of the younger generation, thereby preserving and passing on culture and family traditions.

Recipe sharing is introduced as an innovative approach to foster intergenerational connections. Recipes, often accompanied by family stories and memories, are portrayed as significant sources of emotional connection, particularly through the sharing of food and special family flavors. Additionally, the thesis highlights the potential gap in kitchen skills among younger generations, such as Generation Z.

Addressing the challenge of maintaining family intimacy while staying connected across distances, the paper discusses the impact of information and communication technologies (ICT) and smart devices on intergenerational communication. The digital divide and digital literacy among older individuals are also examined.

To substantiate these findings, interviews with older adults who have experience sharing recipes with younger generations and a questionnaire survey targeting Generation Z youths were conducted to gather perspectives on spending time with older adults and family recipes.

Based on the research, user needs were analyzed to create a user profile, leading to a design proposal for a set of smart kitchen products. These products aim to facilitate the replication of family flavors, thereby enhancing intergenerational connections.

This thesis offers insights into the challenges and opportunities within the context of aging and intergenerational relations. It suggests that innovative approaches, such as recipe sharing and smart technology, can play pivotal roles in fostering emotional connections across generations, ultimately contributing to the well-being and social inclusion of older individuals while preserving family traditions and culture.

1.2 Keywords

intergenerational relationship/elderly/adult children/ recipe sharing/product design

1.3 Introduction

The thesis content explores the complex dynamics of aging, intergenerational relations, and the role of recipe sharing as a means of fostering connections between generations.

The demographic transition towards an aging population is a global phenomenon, with a particular emphasis on China. This demographic shift brings with it several challenges, including the presence of a large population of healthy older individuals who are often overlooked in terms of their contributions to society. Despite being in good health with normal mobility, these seniors may find themselves excluded from social participation and lack products and services tailored to their emotional and lifestyle needs. The result can be feelings of isolation, loneliness, and even age discrimination, all of which negatively impact the mental health of older individuals. In-depth research and analysis can delve into the specific challenges faced by healthy older populations in China and other regions, exploring potential solutions to address issues of neglect, isolation, and age discrimination. This might involve developing age-friendly policies and services that cater to the unique needs and contributions of this demographic.

The importance of intergenerational relations is highlighted, emphasizing the interactions and connections between different age groups, particularly between older and younger generations within families. Good intergenerational participation is described as a means to bridge generational gaps, providing emotional support, reducing loneliness among older individuals, and facilitating the sharing of experiences, resources, and knowledge in a mutually beneficial way. This exchange of support is not one-sided; it also involves older individuals contributing to the younger generation's growth and development. Furthermore, it serves as a vehicle for preserving and passing on culture and family traditions. Research in this area can explore the dynamics of intergenerational relations in different cultural contexts and how they evolve over time. It can also investigate the benefits and challenges of these relationships and identify strategies to enhance intergenerational understanding and cooperation.

Recipe sharing is introduced as a novel approach to fostering intergenerational connections. Recipes are portrayed as more than just culinary instructions; they often carry family stories and memories, making food and special family flavors a significant source of emotional connection. The thesis suggests that younger generations, such as Generation Z, may lack essential kitchen skills, highlighting a potential gap in knowledge transfer between generations. Further research can delve into the role of recipe sharing in preserving cultural and family traditions. It can explore the ways in which recipes serve as repositories of shared memories and traditions. Additionally, investigations into the challenges and opportunities of passing down cooking skills and traditions to younger generations can yield insights into effective intergenerational engagement strategies.

The paper also addresses the challenge of maintaining family intimacy while staying connected across distances. It discusses the impact of information and communication technologies (ICT) and smart devices on intergenerational communication, highlighting the digital divide and digital literacy among older individuals. Research can delve into the evolving nature of family relationships in the digital age. It can examine how technology is both a tool for connection and a potential barrier, depending on individuals' digital skills and access. Strategies for bridging the digital divide and enhancing digital literacy among older populations can also be explored.

The paper describes the methodology used, including interviews with older adults who have experience sharing recipes with younger generations and a questionnaire survey targeting Generation Z youths to gather their perspectives on spending time with older adults and family recipes. Further analysis can be conducted on the findings of these interviews and surveys to gain a deeper understanding of the motivations, needs, and desires of both older and younger generations regarding intergenerational engagement and recipe sharing.

The thesis concludes with a design proposal for smart kitchen products aimed at facilitating intergenerational connections through the replication of family flavors. This proposal aligns with the research findings and user needs identified throughout the study. In-depth exploration of the design proposal can involve the development and testing of these smart kitchen products, evaluating their usability, effectiveness, and impact on intergenerational engagement and emotional connections within families.

PART TWO

Literature Review

2.1 Context of ageing

According to the National Bureau of Statistics of China, it is evident that the country is experiencing a significant demographic shift. The aging population in China is growing at a remarkable rate. In 2021, the number of individuals aged 60 and above reached a staggering 264 million, constituting approximately 18.7 percent of the entire population. These statistics are expected to escalate even further, with a projected figure of 380 million elderly individuals by 2050. The implications of this demographic transformation are profound and multifaceted, presenting both challenges and opportunities for the nation. The sheer scale of this aging population necessitates careful consideration and planning for various aspects, including healthcare, social support, and economic implications[1].

Healthy elderly is a geriatrics term published in 2017, which refers to elderly people who possess the five criteria of physical health, normal functioning, absence of disease, mental health, and social adaptation[2]. Amidst the rapid urbanization, changing family structures, evolving living spaces, and shifting lifestyles in China, a substantial section of the elderly population falls into the category of "healthy elderly." These individuals often find themselves in a unique position, straddling the line between the vitality of their prime years and the frailty that may come with advanced age. Paradoxically, these healthy elderly individuals are sometimes overlooked or neglected in society. Their specific needs, including those related to emotional fulfillment, value realization, spiritual well-being, and adequate healthcare, may not receive the attention they deserve.

Several factors contribute to the insufficient satisfaction of the spiritual, emotional, and healthcare needs of the healthy elderly. These factors stem from various sources, including societal dynamics, family structures, the individuals themselves, and external influences. Understanding the complex interplay of these factors is essential for developing effective strategies to address the unique requirements of this demographic group. Furthermore, recognizing the importance of supporting the mental and emotional well-being of the healthy elderly is crucial in enhancing their overall quality of life.

The mental health of older people is an important issue in the context of ageing. As they get older, they face a decline in their physical and cognitive functions, which may lead to feelings of loss and uselessness. In addition, older people may also face changes in family and social roles, such as retirement and children leaving home, which may also lead to feelings of isolation and loneliness. Research has found that social isolation and loneliness have a significant impact on mortality. The risk of death due to lack of social relationships is higher compared to the risk of death due to obesity[3]. After the covid-19 pandemic, the increase in internet usage and the availability of online services are pushing them forward. Most studies have found Internet use to be beneficial to the mental health of older people, mainly when they use it for social usage[4]. For older people who are poorly digitally literate, however, they need to be given more consideration and helped to participate in an age-friendly way.

Internalised ageism is also a problem, like many other forms of discrimination, ageism is embedded in society[5] Social stereotypes of older people, such as 'needy', 'dependent' and 'resistant to technology', can contribute to negative perceptions of self. They often underestimate their own knowledge due to internalized ageism. Lagacé et al., Citation 2015 study notes, "one of the most insidious effects of ageism is that with age, individuals may internalize, i.e., integrate stereotypes into their self-concept and behave in such a way as to paradoxically confirm and reinforce these stereotypes"[6].

2.2.1 Definition and Scope of Intergenerational Relationships. Intergenerational relationships encompass a broad and intricate web of connections between individuals from different age groups within various societal contexts. While these relationships are frequently studied by anthropologists and researchers in the context of kinship and family systems, it's crucial to recognize that the nature of these connections can vary significantly from one cultural, familial, or generational context to another.

Intergenerational relationships are commonly applied by anthropologists and others in their cross-cultural studies of kinship and family systems, such as parent/child and grandparent/grandchild relationships. However, kinship systems and understandings of age and generation certainly vary considerably from one context to another. When referring to the concept of "generation" outside the family, intergenerational can in many cases refer to a group of people born at a specific time interval[7].

In a study on whether and how intergenerational engagement can help reduce social isolation and loneliness in older people, participants across the sample expressed that society is becoming increasingly age-segregated[8]. It has contributed to widespread social issues like ageism, generational enmity, and loneliness[9]. Society's tendency to segregate individuals based on age has been a prevailing concern. This separation of generations can lead to limited interaction between age groups, hindering the flow of knowledge, experiences, and empathy between generations. Ageism, or discrimination based on age, has become a concerning issue in age-segregated societies. The lack of intergenerational understanding and empathy can contribute to generational enmity, where different age groups perceive one another negatively. The consequences of age-segregation are felt acutely in the form of loneliness and social isolation, particularly among older individuals. These feelings of isolation can have detrimental effects on mental and emotional well-being.

The study participants highlighted the significant value of intergenerational integration as a means of addressing these pressing societal challenges. By fostering connections and interactions between different age groups, society can harness the collective wisdom, experience, and guidance of older generations to benefit younger individuals. Simultaneously, younger generations can offer companionship, fresh perspectives, and support to their older counterparts. Older individuals often possess a wealth of life experiences and knowledge that can serve as valuable guidance for younger generations. This mentorship and nurturing aspect is critical for the personal and professional development of younger individuals. Intergenerational integration is a two-way street. While older individuals provide guidance, younger generations offer a sense of renewal and the opportunity for older generations to stay connected to evolving societal trends and concerns. This mutual exchange enhances the value of all generations. Encouraging dialogue and collaboration between generations fosters understanding, empathy, and the sharing of unique perspectives. It promotes a sense of interconnectedness and combats age-segregation.

2.2.2 Intergenerational engagement. Intergenerational engagement (IE) is a special form of community engagement that aims to provide resources and infrastructure for older and younger generations so that they can participate more easily and sustainably. (Krzeczowska et al.,2021)

A study conducted by Steward and McDevitt in 2023 underlines the profound impact of intergenerational engagement on the well-being of older adults. The findings revealed that IE initiatives effectively combat loneliness and social isolation among seniors. Through these programs, older individuals find a renewed sense of purpose and belonging, which can significantly enhance their overall quality of life[10]. Intergenerational engagement offers older people a platform to showcase their unique roles and contributions within their communities. This not only bolsters their self-esteem but also emphasizes the invaluable wealth of experience and wisdom they bring to the table. As noted by Henkin, Brown, and Leiderman in 2012, demonstrating one's role and contribution in an intergenerational context can instill a deep sense of purpose in older generations. Since older people can enhance their purpose in life by demonstrating their role and unique contribution[11].

Furthermore, intergenerational participation provides abundant possibilities for people of different generations to share their experience, resources and knowledge in a mutually beneficial way through meaningful relationships. Intergenerational engagement thrives on the principle of mutual learning and resource sharing. It provides a fertile ground for individuals of different age groups to exchange experiences, knowledge, and resources in ways that benefit both parties. This reciprocal arrangement fosters meaningful relationships that go beyond age boundaries[8]. Older generations, with their wealth of life experiences, often serve as mentors and guides to their younger counterparts. This mentorship role extends beyond imparting practical skills to encompass imparting wisdom, values, and life lessons. It creates a rich tapestry of intergenerational learning and growth. Therefore older generations can mentor younger generations, based on their experience and wisdom.

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2.2 Intergenerational Relationships and Their Importance

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- 9 Stamp, T., & Freedman, M. (2021). Overcoming Age Segregation. *Stanford Social Innovation Review*. <https://doi.org/10.48558/49JK-2K30>
- 10 Krzeczowska, A., Spalding, D. M., McGeown, W. J., Gow, A. J., Carlson, M. C., & Nicholls, L. A. (2021). A systematic review of the impacts of intergenerational engagement on older adults' cognitive, social, and health outcomes. *Ageing Research Reviews*, 71, 101400. doi:10.1016/j.arr.2021.101400
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Intergenerational engagement in family has the most direct impact on the old adults. The positive involvement of older people in social activities is closely linked to the support of their families. Social support activities between older people and their adult children are an important social link, and the resulting interaction and cooperation can contribute to the development of families and communities [12]. The support and assistance provided by adult children have been found to elevate the subjective well-being of the elderly. This underscores the importance of maintaining close social contacts within smaller, more intimate circles, as older individuals generally prefer. These close-knit familial bonds provide a sense of security and emotional well-being [13].

And based on small groups in the home environment, it is more conducive to targeting services to the elderly. As the study suggests, there was general agreement that many intergenerational projects are delivered through large social events and that more opportunities should be provided to promote individual or group activities [10]. This approach ensures that intergenerational engagement remains flexible and adaptable to the specific preferences and needs of older individuals and their families.

2.3 Challenges in Maintaining Bonds Across Distances

2.3.1 In the contemporary world, one of the foremost challenges faced by families is the scarcity of time and space for maintaining intimacy among family members. Modern life is often marked by a relentless juggling act between work, school, and household responsibilities. The quest for quality family time amidst these demands can be a constant struggle [14].

Geographical dispersion is another complicating factor. Families are increasingly spread across different locations due to work commitments, educational pursuits, and lifestyle choices. This physical separation introduces significant spatial distances between family members, making regular in-person gatherings and interactions challenging [14]. The COVID-19 pandemic accentuated this challenge, leading to prolonged periods of physical estrangement. Another complicating factor is that families tend to be geographically dispersed due to factors such as work. These include work commitments that require family members to relocate for employment opportunities, educational pursuits that lead individuals to study in different cities or countries, and lifestyle choices that lead to residence in diverse locations. These circumstances often result in greater spatial distances between family members.

The COVID-19 pandemic further exacerbated this issue. Lockdowns, travel restrictions, and physical distancing measures imposed during the pandemic period intensified the challenges of physical estrangement within families. Many individuals were unable to visit their family members regularly, leading to a heightened sense of separation. Despite the increasing spatial distances and the constraints imposed by modern life, research consistently underscores the enduring significance of family bonds. The assertion that a lack of time and opportunity to meet may diminish the importance of family bonds has been challenged and refuted by empirical evidence [15]. Physical separation creates challenges in maintaining meaningful relationships and shared experiences, and family members can be unable to participate in each other's lives due to jet lag differences, communication, etc., leading to emotional estrangement and disconnection over time.

Cultural Significance of Intergenerational Ties. In Chinese families, intergenerational relationships hold a unique and deeply ingrained cultural significance. These ties are characterized by their proximity, directness, and functionality. Unlike some Western societies where independence and individualism are highly valued, Chinese culture places a strong emphasis on mutual support and care among family members [16]. Child-rearing and the practice of filial piety are considered ongoing processes in Chinese families. Filial piety, or the respect and care shown by children toward their parents and elders, is a cornerstone of Confucian ethics and traditional Chinese values.

This concept emphasizes the importance of maintaining strong bonds and providing for the welfare of older generations. Preservation of Traditional Values. Chinese families are deeply committed to preserving traditional values. Respect for elders, the preservation of family honor, and adherence to cultural and moral traditions remain integral components of Chinese culture. These values have been passed down through generations and continue to guide familial relationships [16]. The family unit is often viewed as the primary source of moral and ethical education, where elders play a pivotal role in imparting these values to younger generations. As a result, the family is not only a unit of support but also a vessel for cultural continuity. High Expectations and Family Pressure. Chinese society places exceptionally high expectations on the family as an institution.

Elders, in particular, often hold strong expectations for family members to maintain close and frequent contact. This pressure is especially pronounced during important holidays, family events, and significant cultural celebrations. The expectation for family members to stay in touch is not merely a matter of tradition; it is considered a social obligation rooted in the principles of filial piety and family honor. Deviating from these expectations can sometimes lead to feelings of guilt and societal disapproval.

2.3.2 Digital Divide Issues for the Elderly. The Digital Divide Theory. The digital divide theory highlights disparities in access to and utilization of the internet and digital technologies among different segments of society [17]. It posits that these disparities can result in significant social inequalities, with some groups having limited access to the benefits of the digital age. The rapid evolution of society, especially the emergence of smart technologies for various life services, has presented unique challenges for older adults. Adapting to new communication technologies and staying in touch with family members who live far away can be particularly daunting for this demographic group. Physical and cognitive limitations often associated with aging can hinder older adults' ability to embrace and navigate the digital landscape effectively. Relatively low levels of computer and information literacy can further impede their access to and use of digital technologies [18].

Additionally, older adults may encounter barriers and harbor fears about technology adoption and application. This reluctance can stem from concerns about privacy, security, or simply the unfamiliarity of these technologies. Disparities in internet usage between generations are noticeable. Data from the National Bureau of Statistics (NBS) in China illustrate these differences. Internet users aged 60 and above make up only 6.7% of the total internet user population, with an internet penetration rate of 23.7%. This percentage is significantly lower than that of youth internet users, which stands at 73.0% [20]. Such disparities underscore the digital gap between older and younger generations.

The rapid pace of digital technology development necessitates continuous learning and adaptation. Home smart products and networked management systems are becoming increasingly integrated into daily life, which can leave older adults feeling uncomfortable or overwhelmed. To bridge this digital divide, older adults are required to continuously update their digital literacy skills, learn about new digital scenarios and application services, and become familiar with emerging technologies. This can be a formidable task for individuals who did not grow up with digital technology as an integral part of their lives [20].

The digital divide accentuates intergenerational differences, as younger generations tend to be more adept at using and integrating digital technologies into their lives. This widening gap can sometimes lead to difficulties in communication and understanding between generations, particularly when technology becomes a significant mode of interaction. Addressing this digital divide requires efforts to bridge the gap by providing digital literacy training and support for older adults. It also highlights the importance of patient and empathetic communication between generations to ensure that the benefits of technology can be enjoyed by all.

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2.4 The Role of Food and Recipes in Family Connections

Food activity is a broad concept encompassing any task, action, or life experience that involves food and holds personal significance for individuals [21]. It goes beyond the simple act of eating to incorporate the meaningful interactions and experiences surrounding food.

2.4.1 Within the realm of food activities, recipe sharing emerges as a particularly meaningful and emotionally charged practice. It is intrinsically tied to personal experiences, memories, and emotions, making it a powerful connector within families and communities. Intergenerational recipe sharing, in particular, holds immense value. It serves as a conduit for older adults to establish connections with younger generations through the medium of food. This practice fosters a sense of community and togetherness, drawing family members closer to one another. Family recipes, often passed down through generations, are typically transmitted orally [22]. In this traditional form of knowledge transfer, older generations take on the role of mentors, teaching younger family members how to prepare cherished and time-honored dishes. This verbal exchange becomes an avenue for communication and strengthens the bonds among family members.

The process of cooking and sharing recipes offers a rich and multifaceted opportunity for family members to teach and learn from one another. This exchange transcends age boundaries and allows for the exchange of culinary wisdom, innovative cooking techniques, and exposure to diverse global flavors. Grandparents, in particular, play a crucial role in passing down culinary traditions to their grandchildren. Through recipe sharing, they impart not just cooking skills but also the cultural and historical significance of specific dishes. This intergenerational transfer of knowledge helps preserve family traditions and heritage. Conversely, younger generations contribute by introducing contemporary cooking methods, innovative ingredients, and international cuisines to the family's culinary repertoire. This exchange of ideas and techniques keeps family recipes dynamic and adaptable to changing tastes and preferences.

Beyond the practical aspect of preparing and sharing meals, recipe sharing is a profound expression of love and concern for family members' well-being, both physically and emotionally. When older generations teach younger ones to prepare a beloved family dish, it's a gesture of nurturing and care. The act of preparing a meal for someone else is inherently nurturing and can be a powerful way to convey love and affection. For older adults, sharing a well-loved recipe is a tangible expression of their desire to pass on their legacy and ensure the family's continued connection. Younger generations, in turn, learn not just about cooking but also about the values and traditions associated with these recipes. This shared experience fosters a deeper emotional connection between family members, creating lasting memories and a sense of belonging.

2.4.2 Recipe sharing serves as a potent means of preserving cultural traditions and family heritage [22]. Many traditional recipes are deeply rooted in specific cultures or regions, reflecting the culinary customs and flavors of generations past. These recipes are often passed down from one generation to the next, acting as a bridge that connects family members to their cultural roots. Even if family members are dispersed geographically or exist in different time periods, sharing these recipes helps them maintain a tangible link to their cultural heritage.

Beyond the preservation of cultural traditions, food and recipe sharing reinforce the idea of family identity and belonging. It underscores the notion that family members share a common heritage, cultural background, and often, a particular ethnic group. Preparing and enjoying these traditional dishes together can create a shared cultural experience that strengthens the bonds between family members. It also instills a sense of pride and belonging, especially for younger generations who may be navigating the complexities of multicultural identities.

2.4.3 Recipe sharing can stimulate generativity in older adults [23]. Generativity is the psychological concept of giving back to future generations, demonstrating productivity and ability, and expressing creativity and care for others. Older individuals often find deep satisfaction in sharing their culinary knowledge and family recipes with younger family members. This act of passing down recipes, especially through oral tradition, allows them to feel productive and valued within the family structure.

Sharing recipes with younger family members can be a psychologically enriching experience for older adults. It provides them with a sense of purpose and accomplishment. It also allows them to share their life experiences and stories, creating a meaningful intergenerational connection. This practice helps older adults maintain a sense of vitality and relevance as they actively contribute to the family's culinary traditions and heritage.

2.4.4 Recipe sharing from older generations has a significant impact on young adults, particularly in terms of building healthy lifestyle and eating habits [24]. Learning how to cook traditional family recipes equips young adults with valuable culinary skills that can positively influence their dietary choices. Studies have shown that young adults who report having adequate cooking skills are more likely to engage in healthier food preparation behaviors. This includes increased consumption of vegetables and reduced reliance on fast food. These habits cultivated in early adulthood can have long-lasting effects on overall health and well-being. Many young adults lead busy lives, which can lead to a reliance on convenience foods. Learning how to prepare traditional family recipes empowers them to cook real, wholesome foods at home. This not only promotes better nutrition but also fosters an appreciation for the value of home-cooked meals.

2.5 Technology's Influence on Communication and Sharing

Technology here refers to Information and Communication Technology (ICT), defined as hardware (smartphones, tablets, computers, gaming consoles, etc.) and software (internet, social media, communication services, games, etc.) that has become an integral part of the everyday household living in an affluent society. [25]

2.5.1 Communication technologies and social media have played a pivotal role in bridging the generation gap between older and younger family members. These digital tools have opened up new avenues for intergenerational communication and sharing. In studies, such as the one conducted in Bangkok on intergenerational relationships [26], the majority of older individuals highlighted the positive impact of mobile phones. They noted that these devices allowed their adult children to take better care of them by providing easy and instant contact for assistance when needed. Communication technology not only facilitates communication but also provides opportunities for adult children to teach their aging parents how to use these tools effectively. This mutual learning process enhances the digital literacy of older generations and empowers them to engage in modern forms of communication. As older individuals become proficient in using digital tools, they can more effectively and economically stay in touch with their children and other family members. They can engage in regular phone calls, send messages, and even participate in video calls to share updates and stay connected. For older adults, technology-mediated communication offers more than just a means to stay in touch—it fosters a sense of worth and belonging. Instead of feeling neglected in old age, they experience a heightened sense of importance and relevance within the family. The constant care and attention they receive from their families through digital communication channels contribute to their emotional well-being. It reinforces the notion that they are valued and cherished members of the family, irrespective of physical distances.

In summary, the advent of communication technologies and social media has revolutionized intergenerational communication within families. These technologies have not only bridged generational gaps but also facilitated teaching and learning opportunities, thereby enhancing digital literacy among older adults. Importantly, technology-mediated communication has had a positive impact on the emotional well-being of older generations, fostering a sense of worth and connection within their families.

- 22 Claxton, Alana, "Cooking Lessons: Oral Recipe Sharing in the Southern Kitchen" (2019). Electronic Theses and Dissertations. Paper 3550. <https://dc.etsu.edu/etd/3550>
- 23 Kitada, L.R. (2016). *Cooking with Roots: How Older Adults Strengthen Connection with Younger Generations Through Recipe Sharing*.
- 24 Utter, J., Larson, N., Laska, M. N., Winkler, M., & Neumark-Sztainer, D. (2018). Self-perceived cooking skills in emerging adulthood predict better dietary behaviors and intake 10 years later: A longitudinal study. *Journal of Nutrition Education and Behavior*, 50(5), 494-500. doi:10.1016/j.jneb.2018.01.021
- 25 Tammissalo, K., & Rotkirch, A. (2022). Effects of information and communication technology on the quality of family relationships: A systematic review. *Journal of Social and Personal Relationships*, 39(9), 2724-2765. <https://doi.org/10.1177/02654075221087942>
- 26 Huang, C. X. (2020). Current situation, challenges and Countermeasures of digital divide among the elderly. In *People's Forum* (Vol. 684, pp. 128-130).
- 27 Rocco, G. (2019). *Elliq il social robot che fa Compagnia Agli Anziani*. Retrieved from <https://startupitalia.eu/72924-20190708-elliq-il-social-robot-che-fa-compagnia-agli-anziani?infinite>

- 28 Ranasinghe, N., Karunanayaka, K., Cheok, A., Fernando, O., Nii, H., & Gopalakrishnakone, P. (2011). Digital taste and smell communication. *Proceedings of the 6th International ICST Conference on Body Area Networks*. doi:10.4108/icst.bodynets.2011.247067
- 29 Ranasinghe, N., Jain, P., Karwita, S., & Do, E. Y.-L. (2017). Virtual Lemonade. *Proceedings of the Eleventh International Conference on Tangible, Embedded, and Embodied Interaction*. doi:10.1145/3024969.3024977
- 30 Gomez-Hernandez, M., Villalba-Mora, E. and Ferre, X. (2020) 'Use of mobile phones and tablets amongst Spanish seniors: Barriers and motivations', *Proceedings of the 6th International Conference on Information and Communication Technologies for Ageing Well and e-Health* [Preprint]. doi:10.5220/0009570400500058.

2.5.2 Smart devices designed for seniors can facilitate remote communication and engagement. In 2016, Intuition Robotics, an Israeli team, introduced the ElliQ robot, a pioneering active voice-operated care companion designed specifically for seniors [27]. This smart device utilizes simple voice interactions to assist users in various tasks, including navigating on-screen interfaces, conducting video chats with friends and family, connecting to social media, and more. The primary aim of ElliQ is to address the challenges faced by older adults, such as loneliness, limited independence, and the need for support in managing their social, cognitive, and physical well-being. Unlike conventional mobile phones and tablets, ElliQ is designed with the specific physical and cognitive needs of older individuals in mind. ElliQ offers a friendly, autonomous, personalized, and intelligent interface that enhances the overall user experience. It serves as a digital companion to help seniors integrate better into the digital world while providing assistance and support tailored to their unique requirements.

While current interactive communication heavily relies on audio and video interactions, there is an emerging recognition of the potential of multisensory modalities, including touch, smell, and taste, to significantly enhance the level of engagement and immersion in digital communication [28]. Research by Ranasinghe and colleagues (2017) exemplifies this innovative approach. They conducted an experiment that explored the delivery of sensory experiences, such as the taste of lemonade, through digital means. In this experiment, they simulated the taste of real lemonade through electrical stimulation of color and sourness. The senses of smell and taste are intimately linked to an individual's emotions and memories. By sharing these sensory experiences remotely, people can establish deeper emotional connections across distances. The ability to engage multiple senses in digital communication allows individuals to feel closer and more connected, transcending the limitations of traditional audio and video interactions.

2.5.3 Challenges faced by older adults must be considered. Physical Limitations. Aging often brings about physical limitations that can pose challenges in adopting and effectively using digital devices and interfaces [30]. These limitations may include reduced dexterity, visual or hearing impairments, hand tremors, and cognitive decline. Many mobile app products and digital interfaces only offer basic accommodations for older adults, such as increased font sizes and simplified functionality. However, there is a need for a deeper focus on and design for the older adult experience. Creating technology that is truly age-friendly requires considering a wide range of physical limitations to ensure accessibility and usability.

Older people lack basic digital literacy. Digital literacy refers to the ability to effectively use digital devices and navigate online platforms to access information, communicate and perform various tasks [31]. Older adults did not have the same level of exposure to computers and the Internet growing up in their era, and most do not have the opportunity to interact with modern digital technologies and create knowledge for effective use. [32] Due to lack of exposure to technology or previous negative experiences, older adults may feel overwhelmed or intimidated by technology, and the fear of the unknown or the fear of making a mistake makes them thus resistant. That is why adequate training and support is crucial to develop digital literacy, helping them to increase their digital literacy and socialization skills, and also to better alleviate problems such as social isolation.

Respect for emotional needs. In their quest for "intergenerational equality", older persons, especially healthy older persons, have a greater need for spiritual and emotional communion between the young and the old. Whilst older people need to be cared for to some extent, a 'monitored life' may make them feel uncomfortable or lose their autonomy, undermining their autonomy and dignity, especially in their daily lives. The relatively few studies of HCI techniques suggest that social participation is far more important than monitoring, based on feelings and empathy. [33] It is not possible to utilize IoT, big data and smart technologies to achieve care and attention for older people in a fragmented way, but rather to treat older people as an independent and complete individual, and to look at the needs of older people in terms of the intrinsic significance of their human existence, which is an enhancement of the concept of smart wellness from a humanistic perspective.

2.6 Conclusion

The project is situated in the context of Chinese home care, with a specific focus on addressing the daily life needs of healthy elderly individuals. It recognizes the significant demographic shift occurring in China, with a growing aging population. This demographic transition presents both challenges and opportunities. The primary objective of the project is to explore innovative ways to enhance the well-being and social engagement of healthy elderly individuals. It does so by leveraging the rich tapestry of family traditions and culinary heritage that often defines Chinese households.

The project's central idea revolves around creating a new scenario of "harmony between the young and the old." It acknowledges the importance of intergenerational relationships and the role they play in maintaining family bonds and cultural traditions. By utilizing technology as an enabler, the project seeks to bridge generational gaps and foster closer relationships among family members. It envisions a harmonious life scenario where healthy elderly individuals can actively participate, contribute, and connect with their adult children and other generations within the family.

In an era marked by rapid technological advancement, the project places a significant emphasis on preserving the life experience and wisdom of older adults. It recognizes that these individuals have accumulated a wealth of knowledge and skills over their lifetimes. The project's approach is to ensure that the older generation continues to feel valued and respected within the family. It does so by tapping into their expertise, particularly in the realm of traditional cooking and family recipes. This not only enriches the family's culinary traditions but also boosts the older adults' sense of purpose and satisfaction.

An essential aspect of the project is the emotional connection it aims to facilitate. It recognizes that many young individuals, especially those living far from home due to work or education, experience a sense of longing for the tastes and aromas of their family's home-cooked meals. By facilitating the sharing and replication of family recipes, the project addresses this emotional gap. It allows family members, regardless of their physical distance, to recreate the familiar flavors and experiences associated with home-cooked dishes. This not only satisfies their palates but also strengthens the emotional bonds that tie them to their family and cultural roots.

In conclusion, this project presents a holistic approach to improving the quality of life for healthy elderly individuals and promoting intergenerational harmony within Chinese families. By combining technology, cultural heritage, and a humanistic perspective, it seeks to create a harmonious life scenario where each generation contributes to the well-being and emotional connection of the family as a whole. This innovative approach not only benefits the elderly but also enriches the lives of their adult children and strengthens the bonds that hold the family together.

31 Wang, F., Lockee, B. B., & Burton, J. K. (2011). Computer game-based learning: Perceptions and experiences of senior Chinese adults. *Journal of educational technology systems*, 40(1), 45-58.

32 Blažič, B. J., & Blažič, A. J. (2019). Overcoming the digital divide with a modern approach to learning digital skills for the elderly adults. *Education and Information Technologies*, 25(1), 259-279. doi:10.1007/s10639-019-09961-9

33 Brereton, M., Soro, A., Vaisutis, K., & Roe, P. (2015). The messaging kettle. *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. doi:10.1145/2702123.2702462

PART THREE

Research Methodology

The research design of this study employs a mixed research methodology, combining qualitative interviews and observational experiments to gain comprehensive insights into how older adults communicate with younger generations and their experiences in sharing family recipes. Here, we delve into the various aspects of this research design:

1. Qualitative Interviews

The qualitative component of this study serves as a foundational exploration into the communication patterns and recipe-sharing experiences of older adults with younger relatives or friends. This approach allows for a deep understanding of the participants' perspectives and experiences.

Participants: The study involves five older adults, ranging in age from 68 to 75, residing primarily in the cities of Shanghai and Qingdao, China. These participants represent a diverse group in terms of gender, with three women and two men, all of whom are retired and capable of self-care.

Materials: To guide the interviews and ensure consistency in data collection, an interview schedule was designed, as indicated in Appendix 1. The interview process is divided into two sections:

Daily Life and Interaction with Young People. In this section, participants are encouraged to provide insights into their daily lives and their patterns of communication with younger individuals. This exploration seeks to understand the broader context of intergenerational interactions beyond recipe sharing.

Sharing and Views on Family Recipes. The second section is dedicated to delving into participants' experiences with sharing family recipes. It aims to uncover the nuances of recipe sharing, including the motivations, challenges, and emotional aspects associated with passing down culinary traditions.

2. Observational Experiment

Beyond the qualitative interviews, the study extends its inquiry into the dynamics of intergenerational recipe sharing through an observational experiment. This experimental component provides a more practical perspective on how recipe sharing unfolds within families.

Participants: The families of two of the older adult participants have been selected to participate in this observational experiment. This selection ensures a more focused exploration of the actual recipe-sharing interactions within these family units.

The observational experiment allows for a real-world assessment of how the older adults in these families communicate and share family recipes with their younger relatives. It can shed light on the practical challenges faced during recipe sharing and provide insights into the effectiveness of such interactions in preserving family culinary traditions.

The research design of this study combines qualitative interviews with older adults and an observational experiment involving select families. This multifaceted approach aims to comprehensively explore the communication patterns, motivations, challenges, and emotional aspects of intergenerational recipe sharing. By involving participants from diverse backgrounds and conducting interviews that cover both daily life interactions and recipe sharing experiences, the study seeks to provide a rich understanding of this culturally significant and emotionally meaningful practice.

3.1.1 Qualitative Interviews:

ANALYSIS

Section 1

I summarized what older adults described their daily life and interaction with young people and roughly divided them into three sections, activities, socialization, and emotions

Activities. Watching television is their daily activity to keep up with what is happening around them and to pass the time. They have a regular schedule and do most of their own chores when they can, relying on younger family members for a few technical issues. If the community can provide opportunities for activities, it will greatly broaden their hobbies (senior university, community courses, etc.) and they like to participate in such activities. Regularly use their cell phones to make phone calls and communicate with family members (in line with younger people's habits), carry their cell phones with them to pay for things (cell phone payments are so popular), and watch online videos, news, and other more basic cell phone activities that are becoming more and more important, with more and more screen time. Are very concerned about their health, buying healthy products and doing outdoor exercise such as walking and dancing.

Socializing. Most older people live separately from younger members of their families, but still interact relatively frequently with each other due to the popularity of video calls and WeChat, for example. Almost all older people interviewed said that they did not have activities to participate in with younger people. The most frequently mentioned family activity was eating together and discussing health and diet. They enjoy socializing, but mainly focus on familiar people such as family, friends, and neighbors. Some informants attend locally provided activities (community/salon) to socialize and try to develop new hobbies.

Emotion. Some older people felt somewhat behind society physically and psychologically and lacked self-confidence and a sense of achievement, while a few felt happy and fulfilled in their retirement. They are not good at expressing their emotions and needs, and caring for younger family members is their habit and default consensus. Although they would like to have more interaction with younger people, they are afraid to approach them for fear of disturbing their busy lives, and they also report a lack of common topics with younger people. Nostalgia enables older persons to experience emotional warmth and, to some extent, self-regulation of their loneliness.

Section 2

Through their descriptions of their recipes, I summarized the following table (Fig.1) Section 2 of the thesis unveils the nature of the recipes shared by older adults, their chosen methods of sharing, and the heartfelt motivations that drive them to pass down culinary traditions. It highlights the significance of oral traditions in recipe sharing and the desire of older adults to nurture family connections and contribute to the well-being of younger generations through the medium of food and shared experiences.

Classification of Recipes. The study categorizes the shared recipes into two distinct categories.

Daily Dishes. These are dishes that older adults frequently prepare as part of their daily routine. They are likely to be dishes that reflect the older generation's culinary habits and preferences. Preparing these dishes regularly is a part of their everyday life and family culture.

Special Occasion Dishes. These are dishes reserved for special events and celebrations, such as festivals and birthdays. These dishes are often associated with cultural traditions and may hold sentimental value within the family.

Understanding this classification provides insight into the significance of certain recipes in the lives of older adults and how they relate to both daily routines and special family moments.

Verbal Sharing. The predominant method chosen by older adults for sharing their recipes is verbal communication. This choice aligns with the context in which recipe sharing typically occurs – during cooking sessions or family gatherings. Verbal sharing allows for immediate interaction, questions, and clarification, making it a practical choice for conveying cooking techniques and traditions.

Additionally, some respondents mentioned remote sharing through voice and video, particularly when they live apart from their children. This adaptation to modern communication tools highlights the importance of preserving family culinary traditions, even when physical distances separate generations.

The preference for verbal sharing over written documentation or other methods reflects the oral tradition of passing down recipes, emphasizing the importance of shared experiences and direct interaction in the learning process.

Motivations for Recipe Sharing. The study reveals several motivations that drive older adults to share their recipes:

Family Hobbies and Tastes. Many older adults share recipes because they cater to the tastes and preferences of their family members. Cooking beloved dishes is a way to express love and care for one's family, aligning with the idea that food is a universal language of affection.

Regional Specialties. Some recipes are shared due to their connection to regional specialties or traditional dishes. These recipes serve as a means of preserving cultural heritage and passing it down to younger generations.

Desire to Teach and Pass Down Skills. While most respondents may not realize the uniqueness of their home-cooked dishes, they express a desire to teach young people how to cook and share their life experiences. This desire stems from the belief that cooking skills and life wisdom can contribute to the well-being and better living of younger family members.

The motivations for sharing recipes underscore the importance of family bonds, cultural heritage, and the transmission of practical skills and wisdom from one generation to the next.






Recipes they choose to share					
Type	Everyday-style	Everyday-style	Everyday-style	Everyday-style	Special occasion
Difficulty	●○○	●●●	●●○	●●○	●●○
Sharing experience	Yes	Yes	No	Yes	Yes
Ways of sharing	Oral(remote)	Oral	Oral	Written	Oral
Story/memory	"Easy to make, I often make it for my kids"	"A dish that every family in Shanghai makes"	"This dish was appreciated by my granddaughter's classmates"	"My daughter used to ask me to write down recipes then she learned to cook in her own home"	"It is cooked every year for the festival, but not many young people can make it themselves"

Figure.1

3.1.1 Observation Experiment

The experiment conducted in this thesis aimed to shed light on the dynamics of intergenerational recipe sharing between two distinct groups of families. These families were chosen to participate in an experiment that compared traditional face-to-face recipe instruction with remote video-based recipe sharing, each presenting its unique set of challenges and advantages.

1. Face-to-Face Instruction (Figure .3):

In the face-to-face instruction group, families were brought together physically to prepare a traditional dish collectively. This method of teaching cooking has its merits, such as immediate clarification of doubts, hands-on learning, and the rich experience of cooking side by side. However, it also brings its own set of limitations, including potential logistical challenges, the need for all participants to be present in one location, and the constraints of time and space. It is important to explore the intricacies of face-to-face instruction, as it sets the baseline for evaluating remote video-based sharing.

2. Remote Video-Based Recipe Sharing (Figure .4):

In the remote video-based sharing group, families relied on technology to bridge geographical gaps and share home-cooked recipes verbally. This approach acknowledges the realities of modern life, where families may be separated but still wish to preserve and pass on their culinary traditions. While video communication offers the advantage of connecting people across locations, it introduced a distinct set of challenges.



Figure.3



Figure.4

Both groups encountered common problems in the process of sharing recipes. Notably, details were often lost during the sharing process. Verbal communication, whether face-to-face or via remote video, had limitations in conveying intricate details, measurements, or steps accurately. The absence of a written record could result in an incomplete or imprecise recipe, making it challenging for novice cooks to replicate the dish successfully.

In particular, when it came to seasoning, older adults often relied on their own life experiences and intuition to determine the quantity, making it challenging to convey exact measurements. In Chinese cuisine, where seasoning plays a critical role in flavor, this posed a significant challenge. The reliance on personal judgment rather than standardized measurements highlighted the importance of capturing the essence of traditional recipes accurately.

Additionally, the sharing of recipes often lacked detailed descriptions and keys. Instead, the teaching approach involved asking learners to observe and inquire as needed. This approach, while rooted in the oral tradition of passing down knowledge, could pose difficulties for novice cooks who may struggle to understand complex techniques or unfamiliar ingredients when relying solely on verbal descriptions.

Lastly, the recall of stories associated with recipes tended to be triggered by specific questions or prompts. This implied that certain valuable cultural and familial aspects of recipes might go unshared if not probed, underlining the need for a more comprehensive approach to preserving not just the technical aspects of cooking but also the emotional and cultural connections inherent in family recipes.

3.1.2 Conclusion

One of the key reasons why older adults have retained their culinary knowledge is their preference for sharing recipes orally. This practice is deeply rooted in cultural, social, and generational factors. Many older individuals grew up in societies where oral traditions were the primary means of passing on knowledge, including culinary wisdom. As a result, sharing recipes verbally is not just a means of transferring cooking instructions; it's a cultural practice that feels natural and significant to them.

Oral sharing of recipes brings a personal touch to the culinary experience. When older adults share recipes, they don't just convey a list of ingredients and steps; they also share stories, memories, and emotions associated with each dish. These personal anecdotes add depth and meaning to the recipes, transforming them into more than just a set of cooking instructions. It's a way of preserving family history and connecting with one's roots through the act of cooking.

Moreover, verbal sharing of recipes is inherently social. It provides a platform for older adults to engage in conversation, reminisce about the past, and strengthen social bonds. In an era where feelings of isolation can be prevalent, this social aspect of sharing recipes can be incredibly therapeutic and fulfilling. These impromptu exchanges are informal, relaxed, and enjoyable, making them a vital part of older individuals' lives.

However, while oral sharing of recipes holds tremendous value, it is essential to recognize the potential for modernization and preservation. By integrating modern tools such as recording devices or video chats into the process, we can bridge the gap between traditional practices and the digital age. This not only ensures that these culinary traditions are preserved for future generations but also respects the preferences of older adults. The use of technology allows for the documentation of these treasured recipes, complete with the stories and memories that make them special. It enables the dissemination of this culinary heritage to a wider audience while maintaining the authenticity and personal touch that comes from oral sharing.

In conclusion, the culinary wisdom of older generations is a precious resource that deserves recognition and preservation. Their skills, adaptability, and preference for oral sharing of recipes contribute to a unique culinary heritage. By combining the traditional practice of verbal recipe sharing with modern tools, we can ensure that these culinary traditions continue to enrich our lives and are passed down to future generations, preserving not only the recipes but also the stories and social connections that accompany them.

3.2 Study 2

3.2.1 Quantitative research

1. Research Methodology:

The research in Study 2 employed a quantitative approach, utilizing a structured questionnaire to gather data from young people of Generation Z. This method allowed for a systematic examination of their perceptions and behaviors related to spending time with older family members and their engagement with family recipes.

2. Questionnaire Design:

The questionnaire was thoughtfully designed to address two primary areas. Interactions with Older Family Members. This section explored how frequently young people interact with their older family members. It also inquired about the impact of geographical distance on their communication and the methods they use to stay in touch.

Family Recipes and Perceptions. The second part of the questionnaire delved into young people's views and engagement with family recipes. It assessed their interest in family recipes, whether they had studied these recipes, and if they had attempted to cook them themselves. Additionally, it examined their self-assessment of cooking skills and the emotional significance of family recipes.

The sample size for this study was 191 interviews, with 119 valid questionnaires, providing a substantial dataset for analysis.

3. Key Findings:

The questionnaire yielded several noteworthy findings (Chart 1). Willingness to Communicate with Older Family Members: Around 70% of young people expressed a willingness to communicate with their older family members. This indicates a positive inclination towards maintaining intergenerational connections.

Impact of Distance. The majority of respondents acknowledged that geographical distance affects the frequency of communication with older family members. This underscores the significance of technology, with over 76% using video calls or messages to bridge the gap caused by distance.

Perceived Qualities of Older Family Members. Respondents identified several important qualities that older family members bring to their families and communities. These include tradition and cultural preservation, emotional support, wisdom, and life experience. These qualities highlight the value of intergenerational relationships and knowledge transfer.

Interest in Family Recipes. An impressive 89% of young adults expressed interest in family recipes, demonstrating their curiosity about their culinary heritage and family traditions.

Engagement with Family Recipes. While the majority of young people had studied family recipes, more than half had not attempted to cook them themselves. This suggests that there is a strong interest in preserving family culinary traditions, even if the practical application is less common among the younger generation.

Emotional Significance of Family Recipes. Respondents emphasized the importance of family recipes in evoking emotional memories and reducing the sense of distance. This emotional connection to family recipes highlights their role as carriers of heritage and sentiment.

4. Implications

These findings hold several implications for fostering intergenerational connections and preserving family recipes.

Leveraging Technology. The reliance on video calls and messaging among young people to communicate with older family members highlights the role of technology in bridging generational gaps. Leveraging technology can facilitate more frequent and meaningful interactions.

Promoting Culinary Heritage. The strong interest in family recipes suggests an opportunity to promote culinary heritage within families. Encouraging young people to not only study but also attempt to cook these recipes can help preserve traditions.

Emphasizing Emotional Significance. Recognizing the emotional significance of family recipes can enhance their value within families. This emotional connection can serve as a powerful motivator for young people to engage with their culinary heritage.

3.2.2 Conclusion

See Appendix 3 for full questionnaire chart.



Chart 1

The intergenerational dynamics within families are a complex interplay of values, experiences, and perspectives. In the context of younger generations valuing the wisdom and emotional support provided by older family members, we find a profound recognition of the enduring importance of familial bonds. While there may exist a generational gap in perspective, this does not diminish the significance of these connections. Instead, it presents an opportunity for a beautiful intersection of traditions, experiences, and innovation.

Younger individuals, in particular, demonstrate a deep appreciation for the wisdom that their older family members possess. They understand that their elders carry a wealth of life experience and knowledge, and they value the emotional support and guidance that older family members can provide. This recognition of the older generation's role as mentors and reservoirs of life lessons serves to strengthen family bonds and intergenerational relationships.

Family recipes play a pivotal role in this dynamic. They are seen as more than just a list of ingredients and cooking instructions; they are a means of connecting with one's cultural heritage. Younger generations often embrace these recipes with a tech-savvy and health-conscious perspective. They recognize the importance of preserving traditional dishes while adapting them to modern dietary preferences and nutritional standards. This proactive approach reflects their awareness of the need for balanced, health-conscious choices in an increasingly digital world.

The awareness of the importance of family recipes can lead to candid conversations between generations and provides unique opportunities to bridge gaps in understanding. These recipes become a medium through which elders can share their life stories, experiences, and cultural heritage. They serve as a bridge between the past and the present, fostering a deeper appreciation for the roots from which the family has grown.

However, the hectic pace of modern life, coupled with the omnipresence of digital technology, can make it challenging for some younger family members to allocate quality time for interaction with their elders. The distractions of screens and busy schedules can create barriers to meaningful connections. Nonetheless, when these moments of connection do occur, they are often marked by a sincere effort to be fully engaged and present. Younger generations understand that these interactions are precious and carry a unique value in their lives.

Family recipes play a crucial role in these connections. They serve as a tangible link to cultural roots, acting as a symbol of continuity and tradition. Younger family members often exhibit a genuine interest in not only learning these recipes but also in mastering the art of cooking them. They utilize technology, such as cooking apps and online tutorials, to facilitate this process. This tech-savvy approach not only makes the learning process more accessible but also bridges the generation gap in culinary skills. It ensures that the recipes are accurately replicated and passed down from one generation to the next.

In summary, the relationship between younger and older family members is a dynamic and evolving one, influenced by changing perspectives, lifestyles, and technological advancements. While there may be generational gaps, family recipes act as a powerful catalyst for connection. They serve as a conduit for the transfer of wisdom, the preservation of cultural heritage, and the strengthening of family bonds. The tech-savvy and health-conscious attitudes of younger generations further enhance this connection by bridging the gap between tradition and modernity. In an era characterized by busy schedules and digital distractions, the moments of interaction between generations become even more meaningful, as they represent a shared commitment to preserving and passing down cherished family traditions.

PART FOUR

Case Study

4.1 Topic Field

The intersection of CONNECTION, FOOD, and HEALTHCARE in the context of older adults presents a multifaceted and vital area of study. Let's delve deeper into each of these domains to understand their significance and potential impact on the well-being of the elderly population:

Connection

Connection, in this context, encompasses the entire spectrum of interactions and relationships that older adults engage in within their social and virtual environments. It is not limited to mere physical interactions but extends to emotional connections, information exchange, and the dynamics of their living spaces. The significance of this domain lies in its potential to address issues such as social isolation and loneliness, which can have profound effects on the mental and emotional well-being of older adults.

To expand on this area, researchers can investigate various aspects of connection, including the impact of technology and digital platforms on maintaining social connections among the elderly. Exploring how virtual services and environments can be optimized to foster meaningful relationships and mitigate feelings of isolation is crucial. Additionally, studying the role of community engagement, support networks, and intergenerational relationships in promoting emotional well-being among older adults can provide valuable insights.

Food

Food is not merely sustenance but a rich tapestry of cultural, social, psychological, and physical dimensions of life. Its significance extends beyond nutrition, encompassing the rituals, traditions, and memories associated with meals. Examining the role of food in the lives of older adults can uncover profound insights into their well-being.

Researchers can delve into the psychological and emotional aspects of food for older adults, such as how the act of cooking and sharing recipes can enhance their mental health and provide a sense of purpose. Additionally, exploring the impact of dietary choices on physical health, cognitive function, and overall quality of life is essential. This includes investigating the benefits of specific diets tailored to the needs of older individuals, as well as examining the role of communal dining and food-related activities in combating loneliness and depression.

Healthcare

Healthcare is a critical aspect of ensuring the well-being of older adults, encompassing medical services, treatments, and support systems. It is not limited to clinical interventions but also includes approaches that enhance recovery, adaptation, and psychosocial growth in the aging population.

Researchers can delve into the challenges and opportunities in providing quality healthcare for older adults, with a focus on personalized and holistic approaches. This may involve studying the effectiveness of preventive measures, geriatric care models, and the integration of technology in healthcare delivery. Additionally, exploring the psychosocial aspects of healthcare, such as the role of mental health services, caregiver support, and end-of-life care, is vital to understanding the comprehensive healthcare needs of older adults.

In summary, the convergence of CONNECTION, FOOD, and HEALTHCARE in the context of older adults presents a rich and multidimensional landscape for research and exploration. By delving deeper into these domains, researchers can uncover innovative solutions and insights that not only address the unique challenges faced by older individuals but also enhance their overall well-being and quality of life. This interdisciplinary approach recognizes the interconnectedness of these domains and their collective impact on the lives of older adults.

4.2 Criteria

For each topic field, four of the six criteria will be selected to analyse and compare cases in that area

1. Technology

a. Technical Requirements for Older People. In assessing cases in this area, it's essential to recognize that older individuals often have lower digital literacy levels. Consider how the complexity of technology systems can affect their ability to use and engage with them. Explore whether solutions exist to bridge the digital divide, such as simplified interfaces or tailored training programs for older users.

b. Motivation and Usability of Design: The usability of technology plays a significant role in engaging older adults. Analyze how the design of products or services impacts their motivation. User-friendly design, clear instructions, and intuitive navigation can enhance usability. Investigate how design choices cater to the specific needs and preferences of older users, considering factors like font size, contrast, and input methods.

2. Interaction

a. Communication with the System. When evaluating cases related to interaction, consider how effectively older individuals can communicate with technology systems. Assess the clarity of instructions, responsiveness to voice or touch commands, and overall user experience. Explore how user-friendly interfaces can facilitate seamless interaction and reduce frustration among older users.

b. Interaction between People. Examine how technology facilitates interaction between older individuals and others, such as caregivers, family members, or peers. Analyze how digital platforms or communication tools enhance social connections, mitigate feelings of isolation, and promote meaningful interactions among older adults. Investigate whether technology helps bridge geographical distances, allowing for remote communication and fostering social bonds.

3. Emotion Engagement

a. Affective States. Emotions are integral to the engagement of older individuals with technology. Study how different affective states, such as interest, boredom, happiness, or anxiety, impact their involvement. Analyze how technology solutions can be designed to evoke positive emotions, reduce anxiety, and sustain interest among older users. Explore the role of gamification and storytelling in enhancing emotional engagement.

b. Learner's Involvement. Delve into how emotional engagement affects the level of involvement of older learners. Understand how technology can adapt to individual emotional states and preferences, ensuring that the learning or engagement experience remains personalized and tailored to the emotional needs of each user.

4. Personalization

a. Flexibility and Individual Differences. Personalization is crucial when considering cases in this area. Explore how technology solutions allow for flexible problem-solving and accommodate individual differences among older users. Assess whether personalized content, adaptive learning algorithms, or customizable interfaces are integrated into the technology to cater to varying levels of skills and preferences.

b. Tailored User Experience. Investigate how technology systems adapt to the unique characteristics and requirements of older individuals. Analyze whether these systems offer customization options that allow users to set preferences, create personalized profiles, or receive content tailored to their specific needs and interests. Consider how personalization can enhance engagement and usability for older adults.

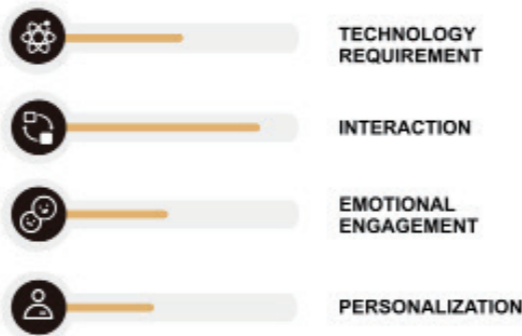
In each of these criteria, the focus should be on understanding how technology can be effectively designed and implemented to cater to the unique needs and challenges faced by older individuals, ultimately improving their quality of life and engagement with digital solutions.



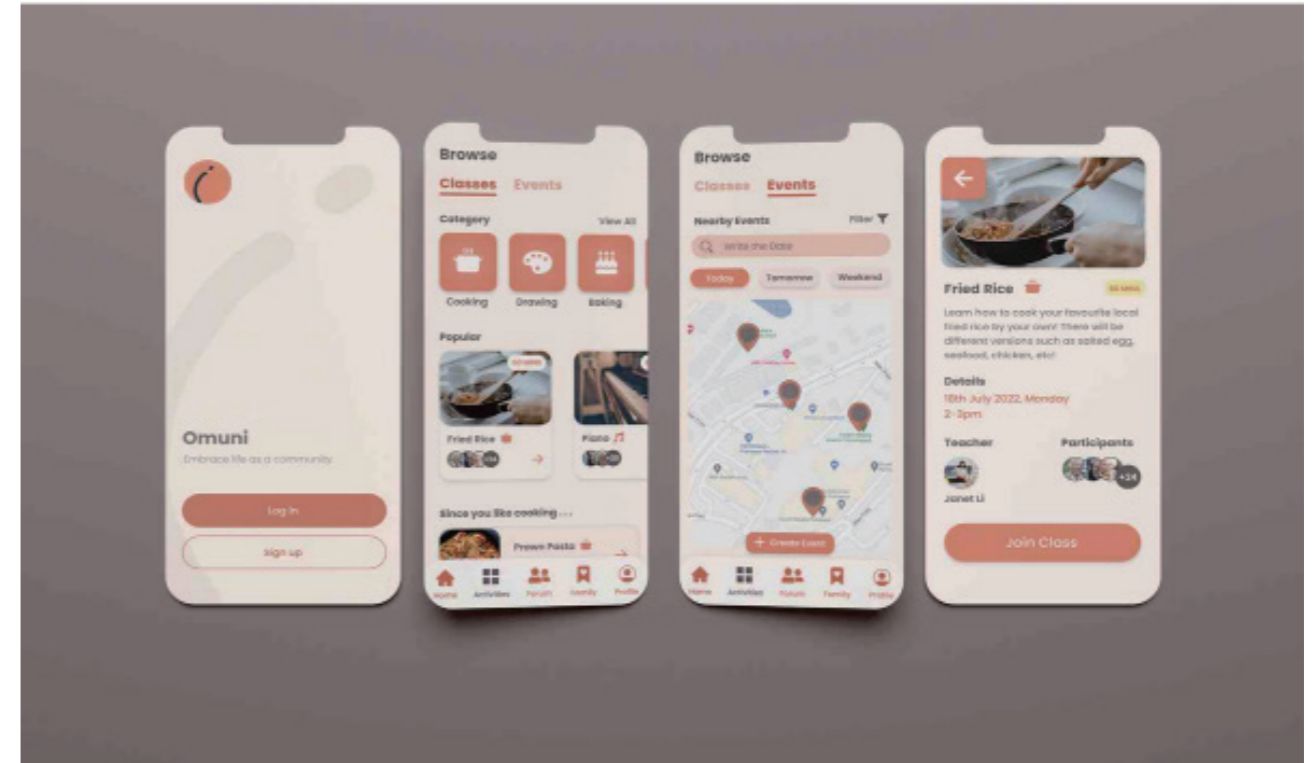
Abstract

To address the social isolation of elderly people living in nursing homes and to bridge the gap in service provision between stakeholders. The project provides a platform designed specifically for older people to engage in social interaction, family connections and digital assistance.

Target Group



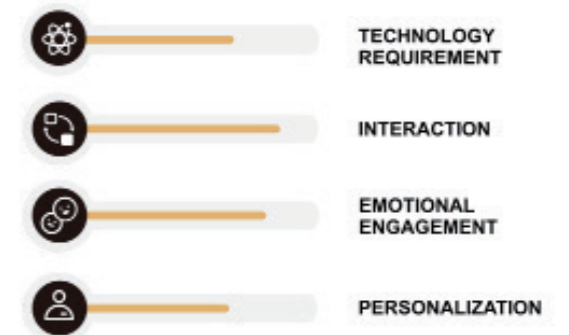
https://www.behance.net/gallery/105269529/Smiti-App-for-reducing-social-isolation-among-elderly?tracking_source=search_projects%7Crecipe+sharing+elderly



Abstract

Omuni, which is derived from the word "community", is a mobile application aimed to encourage elderlies to be more proactive in the society, and for them to stay connected with peers and trends. The primary motivation behind the application is to alleviate and eliminate the feeling of loneliness and social isolation among elderlies by offering to participate in activities or courses close to home

Target Group



https://www.behance.net/gallery/105269529/Smiti-App-for-reducing-social-isolation-among-elderly?tracking_source=search_projects%7Crecipe+sharing+elderly



The One

2022 Can Cui

CONNECTION

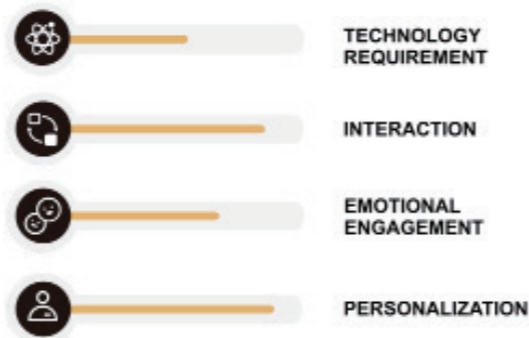
Keywords: Memory Preservation/Family/Digital



Abstract

THE ONE is a service that helps family members to digitally preserve their memories. The service consists of an online platform and an offline Time Capsule event. Time Capsule aims to make more people aware of the diverse forms memories are preserved, and encourages people to engage. The online platform supports family members to upload their memories online, individually or collaboratively, allowing memories to be passed on vividly, regardless of time and physical constraints.

Target Group



<https://graduateshowcase.arts.ac.uk/project/410993/cover>

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Chupa

2022 Meghana Shailendra

CONNECTION

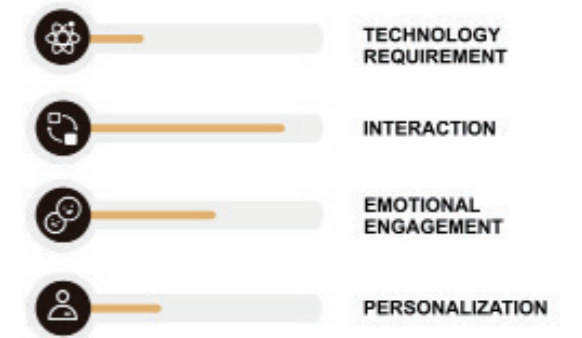
Keywords: Teamwork/Hidden difficulties/Inclusion



Abstract

This project explores how inclusion can be facilitated in transdisciplinary teams. Chupa is a game created to start comfortable conversations about an individual's hidden difficulties within diverse transdisciplinary teams. The service has been initially piloted in higher education institutes with educators and student teams.

Target Group



<https://graduateshowcase.arts.ac.uk/project/410109/cover>

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NextAct

2022 Jiaqi Wang

CONNECTION

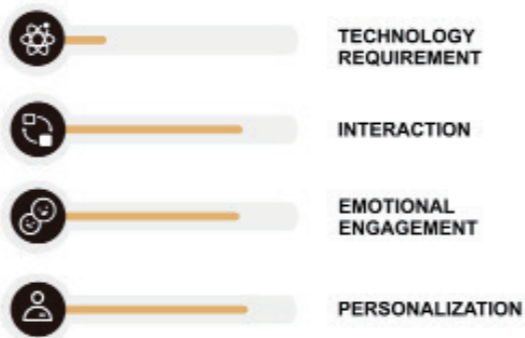
Keywords: Elderly/Community/Participant-led/Healthy ageing.



Abstract

The NextAct is a participant-led network which empowers people 65+ to engage in interest-based communities in a way which they want and foster continuous engagement between members, finally enabling healthy ageing. It not only brings 65+ adults independence and safety but the equal right to enjoy the experience of belonging within the neighbourhood.

Target Group



<https://2022.rca.ac.uk/students/jiaqi-wang>

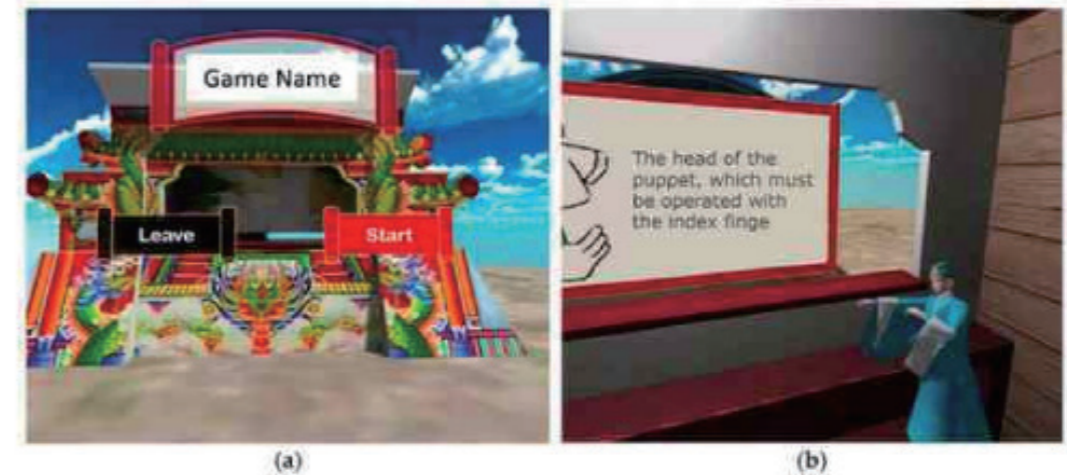
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Glove Puppetry

2022 Chou et al.

CONNECTION

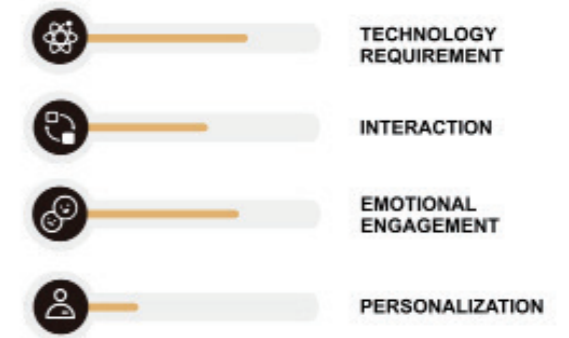
Keywords: Elderly/Tradition/Virtual Reality



Abstract

Through a digital-technology-based virtual reality (VR) game, this study creates the design elements upon "Glove Puppetry" with the characteristics of the traditional art of Taiwan in order to improve the elderly's digital gap and enhance the elderly's interest in digital games. Elderly people play the role of passing on their experience and knowledge and guiding the younger generation to approach the traditional culture of Taiwan. The learning and instruction of the intergenerational interaction enhance the connection between the elderly and digital technology and lead to cultural heritage and intergenerational interaction.

Target Group



<https://doi.org/10.3390/su14083213>

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Out of the Box for Samsung 2009

CONNECTION

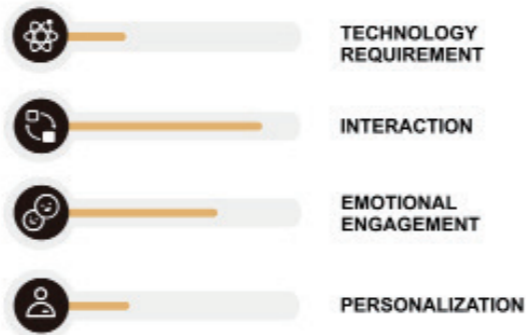
Keywords: Elderly/Companion/Robot/Product Design



Abstract

Poor design and unfamiliar terminology prevent older people from using their phones. The design team took advantage of the NFC technology available on the phone and we created a set of magic cards to help users discover the phone's features. Simply tap the card on your phone and it acts as an analogue shortcut to that function and it will take you there. The back of the card shows you how to implement the feature without the card - enabling the user to use and explore the device themselves.

Target Group



<https://specialprojects.studio/project/nfc-cards/>

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SEAM

2021 Puchalska,Weglinski&Hwang

HEALTHCARE

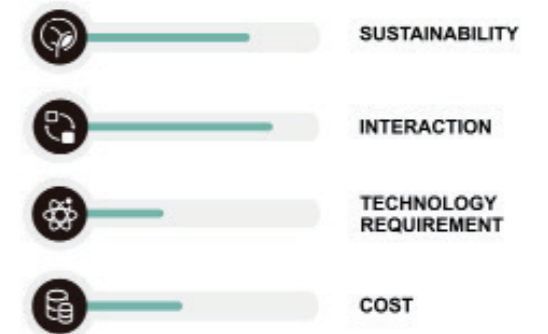
Keywords: Remote/Alzheimer's/Communication/Video call



Abstract

8.7 million people in Europe who suffer from Alzheimer's disease are disconnected from their families. "Seam" leverages video-calling to offer early-stage Alzheimer's patients, friends, and caregivers a low-barrier way to create togetherness at a distance. It consists of hardware for the Alzheimer's patient in the form of a video camera and a portable device that connects to the TV, and an app for caregivers, friends, and families. The two groups can communicate through instant messaging in the form of voice recordings, videos, and pictures, asynchronously, and through video calls or by playing multiplayer games.

Target Group



<https://medium.com/togetherness-at-a-distance/seam-new-communication-tool-for-remote-togetherness-a599067c95a3>

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ORY

2017 FH Joanneum

HEALTHCARE

Keywords: Elderly/Social interaction/UX

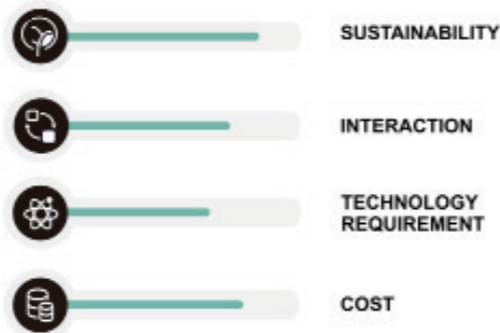


Abstract

Ory is a future-ready health monitoring & safety system that empowers the digital generation of seniors to live a self-determined life by regaining responsibility and control without compromising on safety. It is driven by artificial intelligence and works without cameras, infrared or other people involved. This means the user is in full control of his/her own monitoring.

With the help of wireless signals, Ory can track people through walls, analyse vitals as well as detect a fall or irregularities in walking speed over a long time period. This is not only a central part in detecting slowly rising diseases like dementia, but also raises consciousness about their general health & ageing process and helps to act proactively to accept & prepare for upcoming changes in high age.

Target Group



<https://www.behance.net/gallery/64464311/Ory-Healthcare-Empowered-the-future-of-aged-living%29>

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ELI·Q

2017 Yves Béhar

HEALTHCARE

Keywords: Elderly/Companion/Robot/Product Design

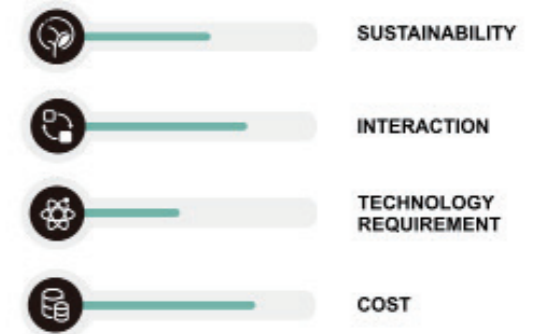


Abstract

The ElliQ robot, designed in collaboration with a team at Intuition Robotics, was developed to address the problem of loneliness and lack of social activity among ageing adults. Connector allows them to easily video chat with friends and family, view photos, and also send text messages, calls and connect to social media.

The Engager tool enables ElliQ to suggest music, share the news, find and play videos, or read audiobooks, while the Companion element uses speech, lighting, sound, images and movement to convey emotion and support.

Target Group



<https://www.dezeen.com/2017/01/11/elliq-robot-yves-behar-fuse-project-helps-older-adults-stay-connected-world-design-technology/>

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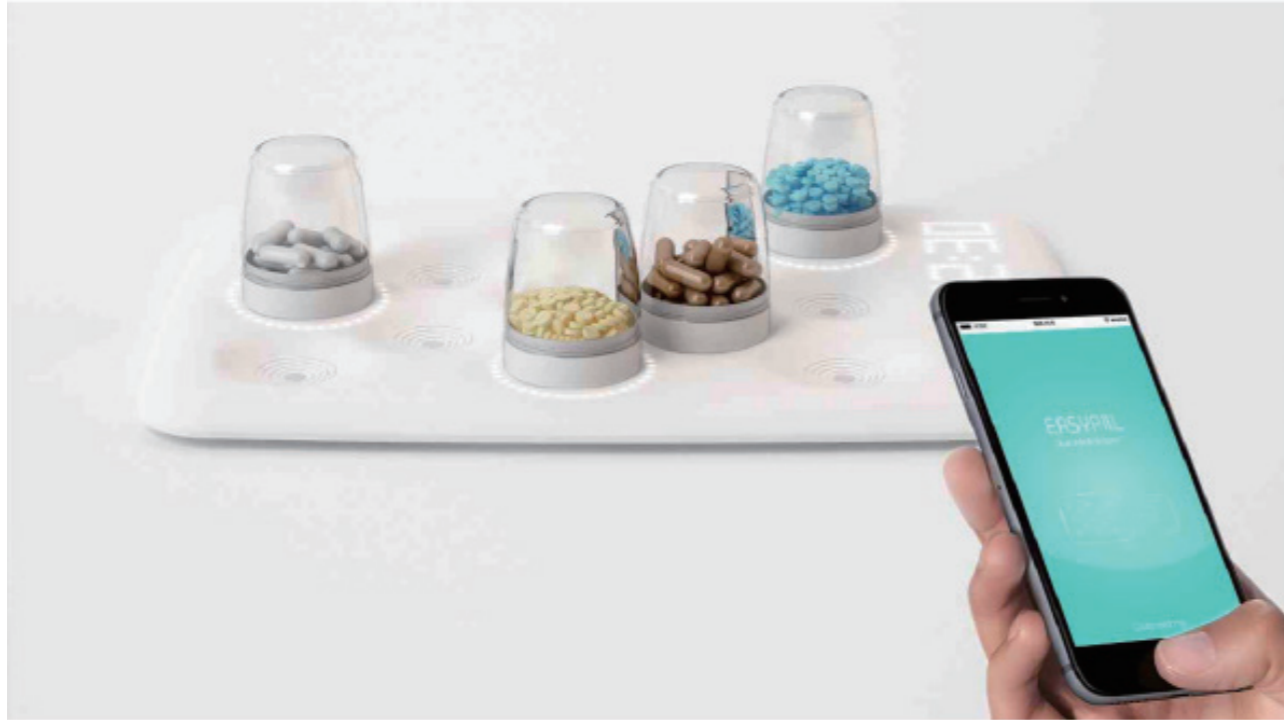


Easy Pill

2013 ChungYen Chang

HEALTHCARE

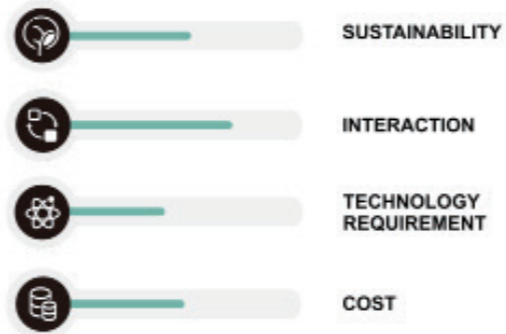
Keywords: Pill Reminder/Medical System/Data Base



Abstract

EasyPill is a smart cloud medical system composed by a pill reminder, an exclusive application, and a cloud data base. The main concept of Easypill is based on "Internet of things", which integrates domestic medical devices to improve efficiency of medical system through a pill reminder, Pillpad. The PillPad is designed with an integrated form and intuitive usage to optimize the dosing scenario of elders. The app-based system works hand-in-hand with an electronic pill pad. When it's time to take a specific medicine, that portion of the case lights up to give the notification to the elderly users, while monitoring the dosage situation and informs the related ones.

Target Group



<https://www.behance.net/gallery/43206719/EASYPILL>

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Memo Box

2022 He Ran

HEALTHCARE

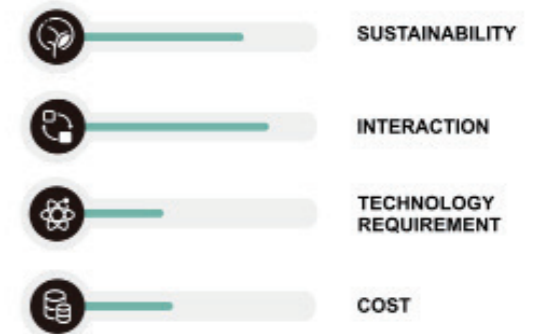
Keywords: Memory Decline/Story/Family communication/System Design



Abstract

Memo Box provides a simple, intuitive and self-esteem way for the elderly to record their memories. It is a product service system, consists of the main product, guide cards, memory cards, and an APP (just for family members to do an order and listen to recordings). Except for APP, no digital interface is used in the system, so the elderly can easily learn to use.

Target Group



<https://designwards.com/interaction/111964/Memo-Box-for-elderly-people-to-record-memory>

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UP-LIFTER

2021 Zitong Zhao



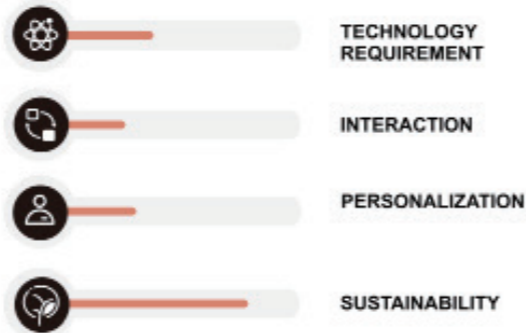
Keywords: Elderly/Shopping trolley/Product Design



Abstract

It can be noticed that lifting and carrying are the two basic actions of elderly people in the application of the household shopping cart. However, because of their physical function decline, such high-frequency, repetitive bending movements are extremely easy to cause the lumbago of the elderly. "UP-LIFTER" household shopping trolley is intended to solve the problem that elder users need to bend over very frequently to pick up and place items in the household shopping trolley due to the low position of shopping bags. It is hoped that the optimization of structure and function can bring a better experience for elder users. The use frequency of the household shopping trolley is getting higher.

Target Group



https://www.behance.net/gallery/108100337/UP-LIFTER-Household-Shopping-Trolley/tracking_source=search_projects%7Cfood+elderly

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Social Oven

2018 Magda Sabatowska



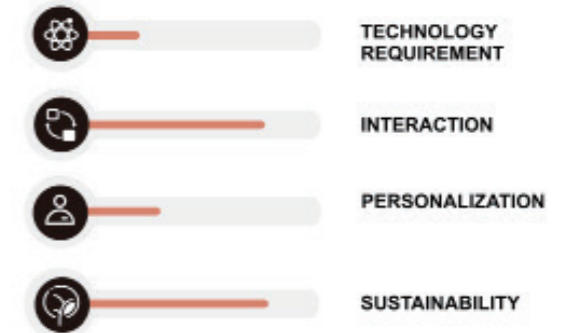
Keywords: Exchange meal/Social interaction/Cooking Kit/Neighbour



Abstract

Magda Sabatowska has devised a cooking kit to help isolated elderly female residents of housing estates in Poland socialise with their neighbours. Called Social Oven, the kit provides the elderly residents, who are often isolated in their homes, with the tools needed to exchange homemade meals with their neighbours. The kit is paid for as a subscription service that both the neighbours and the elderly residents can subscribe to. Neighbours can pay for their meals with money or by doing tasks such as doing some grocery shopping for the elderly resident or fixing things around their house.

Target Group



<https://www.dszszen.com/2018/07/18/social-oven-magda-sabatowska-central-saint-marins-design/>

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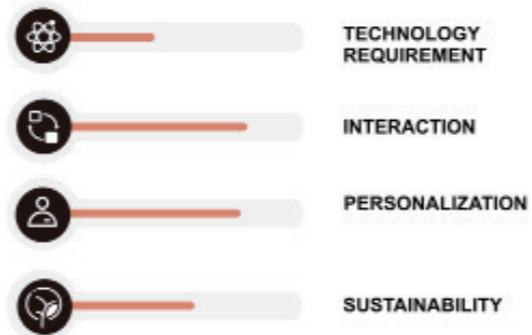
Keywords: Exchange meal/Social interaction/Cooking Kit/Neighbour



Abstract

"Hello 60 provides personalised nutritional care and health services for older users. Through medical examination reports and questionnaires, we can better understand the real situation and needs of the elderly and provide targeted advice to help them gradually change their poor diet and lifestyle habits. 'Hello, 60' also provides offline community activity toolkits for both the elderly and the community elderly care centre. Expert involvement, interactive communication and peer support allow older people to gain more knowledge and skills appropriate to their situation and reduce isolation.

Target Group



<https://www.rcaservicedesign.com/projects-final-show-2021/hello-60>



PART FIVE

Design Proposal

5.1 PERSONA

Based on previous research and analysis, I created two personas as a way to gain a deeper understanding of my target audience. They are created based on real user data and research findings. These personas encapsulate key characteristics, behaviors, motivations, and pain points of the individuals they represent.



Li Tang

Age: 70

Location: Suburban area

"I hope my granddaughter is doing well on her own."

Profile

Mrs. Tang is warm, caring, and full of life. She values tradition and family connections, and her cooking is a way of expressing her love and affection. Mrs. Tang lives with her son, and her adult granddaughter, lives far away due to work commitments.

Activity

- She likes to cook.
- She participates in community activities
- She often watch tiktok
- She video chats with friends and family

Goal

- She wants to share her cooking recipes with others.
- She often wonders if her grandchild is eating well and managing daily life.
- She wants her grandchild to learn some cooking skills and take care of herself

Obstacle

- The young man is busy and doesn't know if she should be disturbed
- Lack of ways to understand each other's lives
- She doesn't know if her granddaughter will understand the recipes she describes



Xiao Yang

Age: 24

Location: Shanghai

"I've tried to replicate family recipes and failed."

Profile

Yang Xiao has just graduated from college and moved to another city to live and work alone. She has a busy schedule and often works overtime. Her cooking skills are poor, so she often orders takeout, and she sometimes misses home, especially her grandma's cooking. She occasionally chats with her grandmother on the phone and has attempted to cook via voice instruction, but with relatively unsuccessful results.

Goal

- She wanted her grandmother's family recipes to be recorded
- She wanted to be able to reproduce her grandmother's cooking at home

Obstacle

- She sometimes misses her home cooking.
- Her kitchen skills are terrible.
- Worried about the health of the elderly

5.2 User Needs

Situation1.

Challenges: Older people often find themselves in situations where they lack opportunities for emotional communication with their children, especially if their children live far away. While they want to contribute to their children's lives and well-being, they also want to respect their children's independence and not disturb them excessively.

Implications: This situation underscores the need for maintaining emotional connections across generational gaps. It highlights the importance of finding ways to engage with and support younger family members without imposing on their lives. Solutions may involve fostering open and non-intrusive channels of communication, which can include sharing recipes, as it provides a meaningful avenue for connecting emotionally.



Situation 1

Situation1.

Challenges: Older adults often express concerns about the dietary habits of their children living away from home. They worry about whether their children are eating well, consuming meals on time, and making healthy food choices.

Implications: This situation highlights the caring and nurturing instincts of older adults. It emphasizes the importance of family well-being and health. Addressing these concerns may involve facilitating better communication between generations regarding dietary choice, sharing recipes for nutritious meals, and providing advice on maintaining a balanced diet.



Situation 2

Situation3.

Challenges: Many young people miss the taste of family dishes that hold sentimental value. However, they may not possess the culinary skills to recreate these dishes themselves.

Implications: This situation points to the emotional significance of family recipes and the desire to preserve culinary traditions. It highlights an opportunity for intergenerational learning and bonding through cooking. Solutions can involve older adults teaching their younger family members how to cook these cherished dishes, either in person or through remote guidance.



Situation 3

Situation1.

Challenges: When older adults dictate recipes, they often rely on their personal experiences and tastes rather than providing specific measurements, especially for seasonings and ingredients.

Implications: This situation reflects the traditional oral tradition of passing down recipes. It underscores the need for a more standardized and detailed approach to preserving culinary knowledge. Finding a way to bridge the gap between oral traditions and modern recipe documentation can ensure that valuable culinary wisdom is accurately transmitted to younger generations.



Situation 4

5.3 Design Proposal

The concept presented suggests the development of a product that serves in kitchen, connecting the younger generation to the elderly through cooking, increasing emotional communication, and helping to pass on family culture by "copying" the flavours of family.

1.Product Purpose and Objectives:

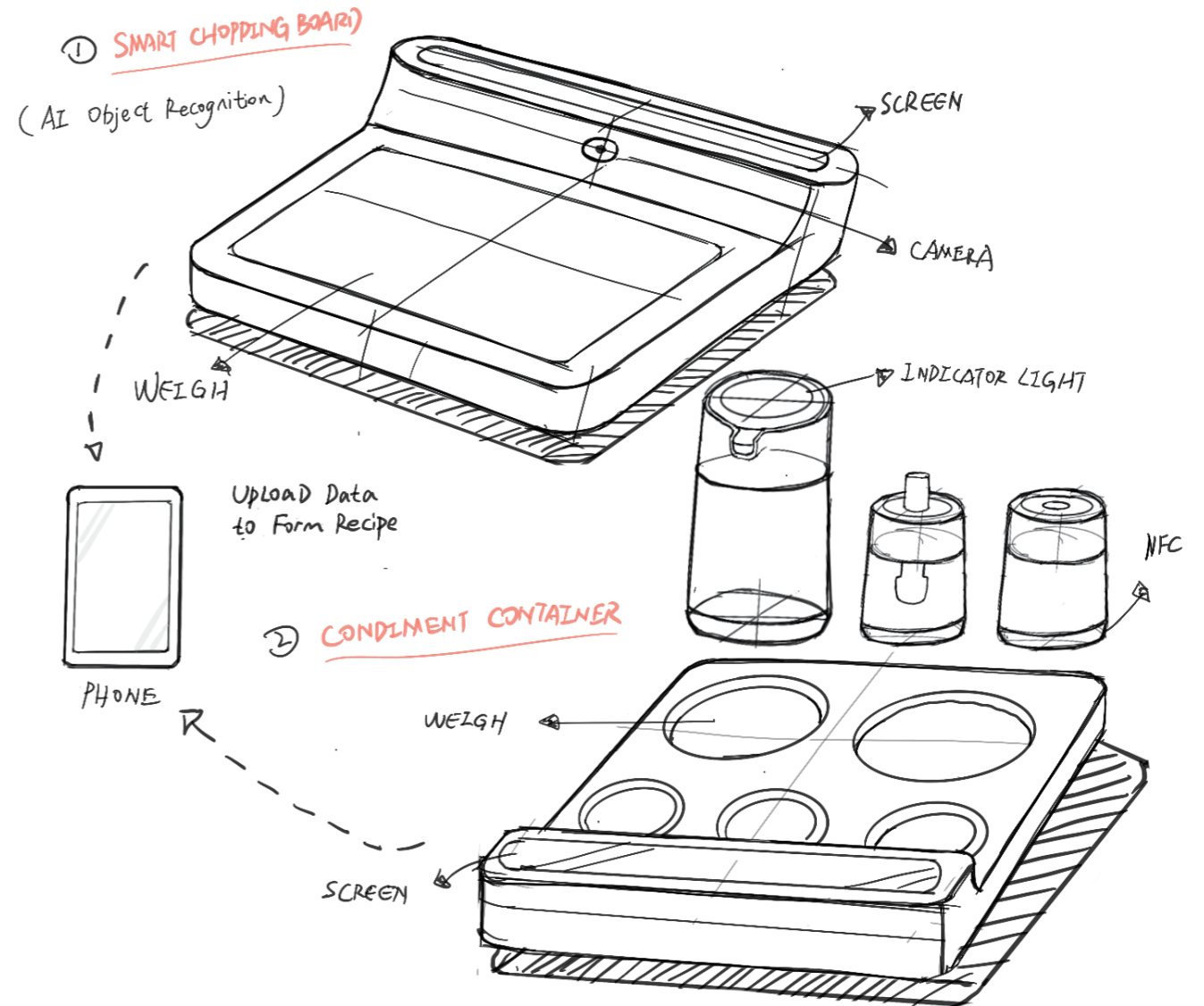
The proposed product's primary purpose is to facilitate intergenerational connections and the sharing of family culture through cooking. Its objectives include:

Emotional Communication: The product should enable younger generations to engage with their older family members emotionally while cooking. It should provide a platform for meaningful interactions and shared experiences.

Culinary Tradition Preservation: The product should assist in passing down family culinary traditions, recipes, and flavors from one generation to the next. It should ensure the authenticity and accuracy of shared recipes.

Ease of Use: The product should be user-friendly, making it accessible and appealing to both older and younger users, regardless of their culinary expertise.

Integration of Technology: Considering the digital age, the product may incorporate technology to facilitate remote interactions, tutorials, and recipe sharing, accommodating the needs of families living apart.



5.4 Functionality

1. Collect data and record recipes

Purpose: This functionality aims to bridge the gap between older adults' traditional, experience-based recipe sharing and the need for precise measurements, particularly in the case of seasoning.

How it works: The product can include a feature that allows older adults to input the details of their recipes, including the type and amount of ingredients used, cooking techniques, and preparation steps. Users can use voice commands or a user-friendly interface to record this data.

Benefits:

Quantifiable Recipe Data: This functionality helps quantify family recipes by recording precise measurements and ingredient quantities, especially for seasonings.

Accurate Replication: Younger users can benefit from this data when attempting to replicate family recipes, ensuring that the flavor closely matches the original.



2. Voice interaction

Purpose: Voice interaction simplifies the user experience, making the product more accessible to older adults who may face challenges with smartphone use.

How it works: The product can feature voice-activated commands and responses. Older adults can narrate the recipe preparation process or share related stories through voice input. The product's AI or voice recognition technology records and stores this information.

Benefits:

User-Friendly: Voice interaction eliminates the need for complex smartphone navigation, making it accessible to older adults.

Preservation of Oral Tradition: Voice interactions allow older adults to share recipes and stories as they traditionally would, preserving the oral tradition of recipe sharing.



3. Health record

Purpose: This functionality addresses the concern of older adults about their dietary intake and offers a non-invasive way for children to monitor their parents' health.

How it works: The product can include a feature where older adults record their daily meals and dietary choices. This data is then analyzed to provide insights into their nutrition. Children can access this data through a secure app to stay informed about their parents' health.

Benefits:

Health Monitoring: The health record functionality enables children to monitor their parents' dietary habits and overall health without being intrusive.

Nutritional Insights: The analysis can offer suggestions to reduce oil and sugar intake or make other dietary improvements.



4. Improve cooking skills

Purpose: This functionality aims to help younger generations improve their cooking skills while preserving family recipes.

How it works: Younger users can access the collected recipe data to replicate family dishes. The product guides them through the cooking process, reminding them of ingredient quantities and preparation steps. It can also play voice guidance from older family members to provide real-time assistance.

Benefits:

- **Culinary Learning:** Younger users can learn to cook family dishes accurately, enhancing their culinary skills.

- **Emotional Connection:** Voice guidance from older family members adds an emotional dimension to the cooking experience, creating a sense of connection.



For Older Adults:

Older adults start by placing their cutting board on a clean and stable surface in their kitchen. They gather the ingredients for their family recipe, just as they would traditionally. As they chop or prepare each ingredient, they place it on the smart cutting board. The board uses sensors and image recognition to identify each ingredient.

Simultaneously, they use the condiment containers to dispense seasonings and condiments into their dishes. These containers calculate the precise amount of each seasoning used. The smart cutting board and condiment containers record data in real-time. This includes the type and quantity of ingredients and seasonings used, as well as any specific preparation steps.

Voice interaction can be used to add context, such as sharing family stories or anecdotes related to the recipe. Older adults can simply speak their stories while preparing the dish.

Once the recipe preparation is complete, older adults can wirelessly upload the collected data to the companion app. The app processes this data to create a quantified family recipe.

The app can also store recorded daily meals and share nutritional intake and health with each other.

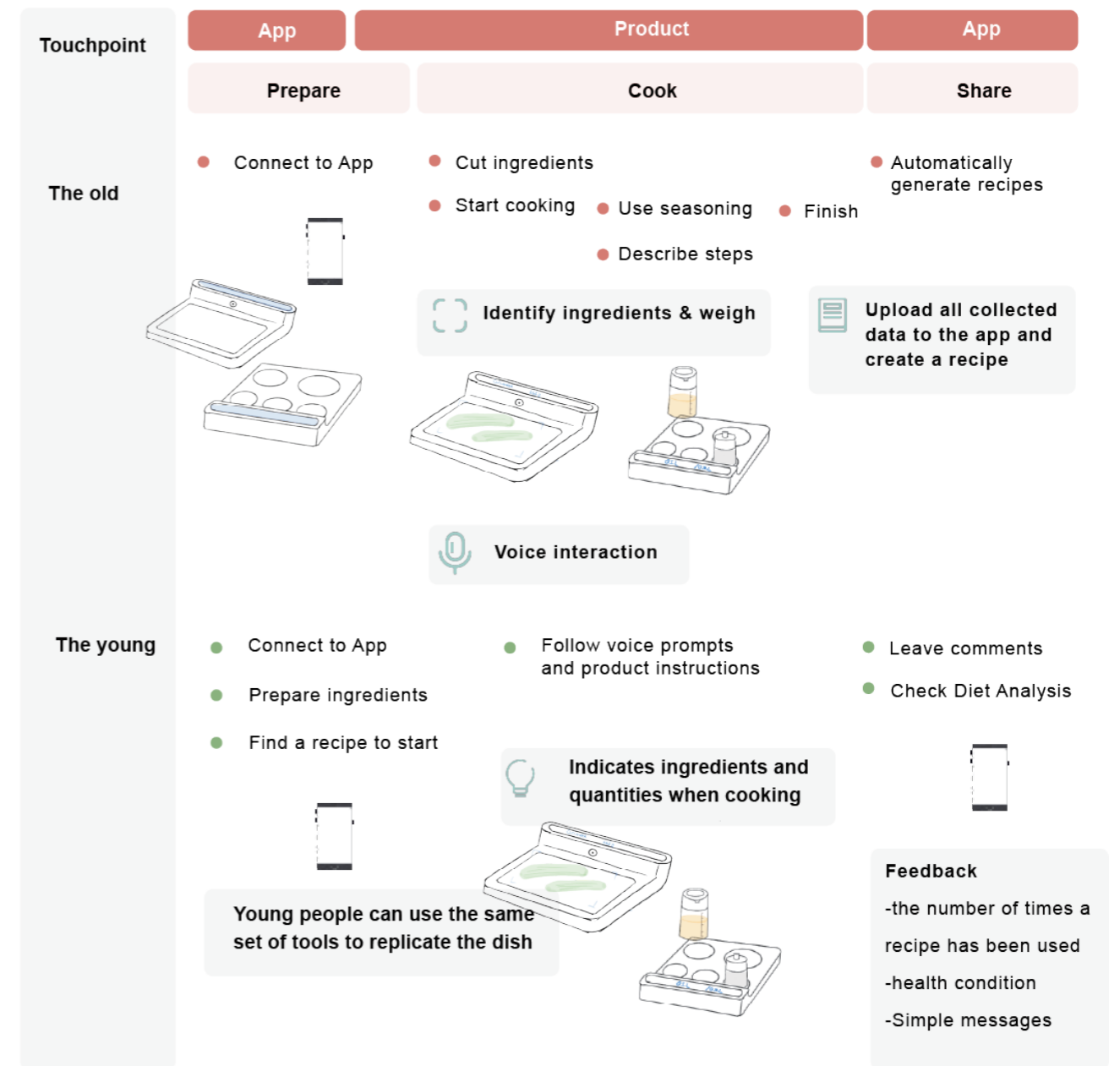
For Younger People:

Younger generations, who may be living apart from their older family members, can access the quantified family recipes through the companion app on their smartphones or tablets. They can browse through a collection of family recipes, each with precise measurements and step-by-step instructions.

When they decide to cook a family recipe, they gather the required ingredients and seasonings. They place their own smart cutting board on a clean surface and use it to replicate the recipe. The cutting board provides real-time guidance on ingredient quantities and preparation steps. Voice guidance from their older family members adds a personal touch to the cooking experience.

The younger users can confidently replicate the dish, knowing that they are using precise measurements and following the authentic family recipe.

They can also share their cooking experience with their older family members through the app, fostering a sense of connection and providing feedback on their successful replication of the dish.



5.6 Morphology

The proposed product consists of two key components: a smart cutting board and a set of condiment containers. It aims to simplify the process of recipe sharing, data collection, and culinary replication for both older adults and younger generations.

1. Smart Cutting Board:

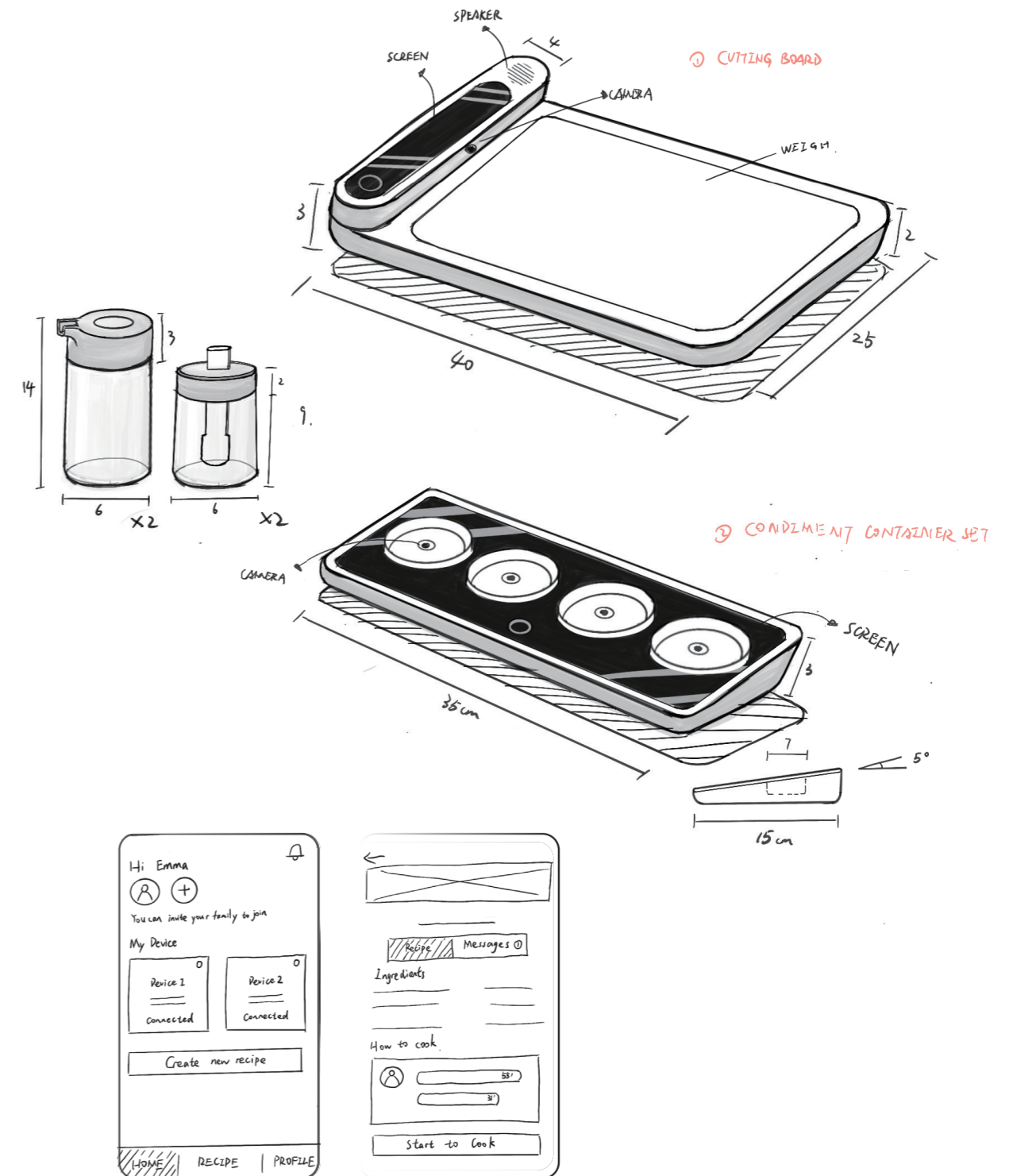
Purpose: The smart cutting board serves as a multifunctional tool to assist older adults in preparing recipes accurately and quantitatively. It simplifies the process of identifying and measuring ingredients, which is especially beneficial for traditional recipes where precise measurements are often omitted.

2. Set of Condiment Containers:

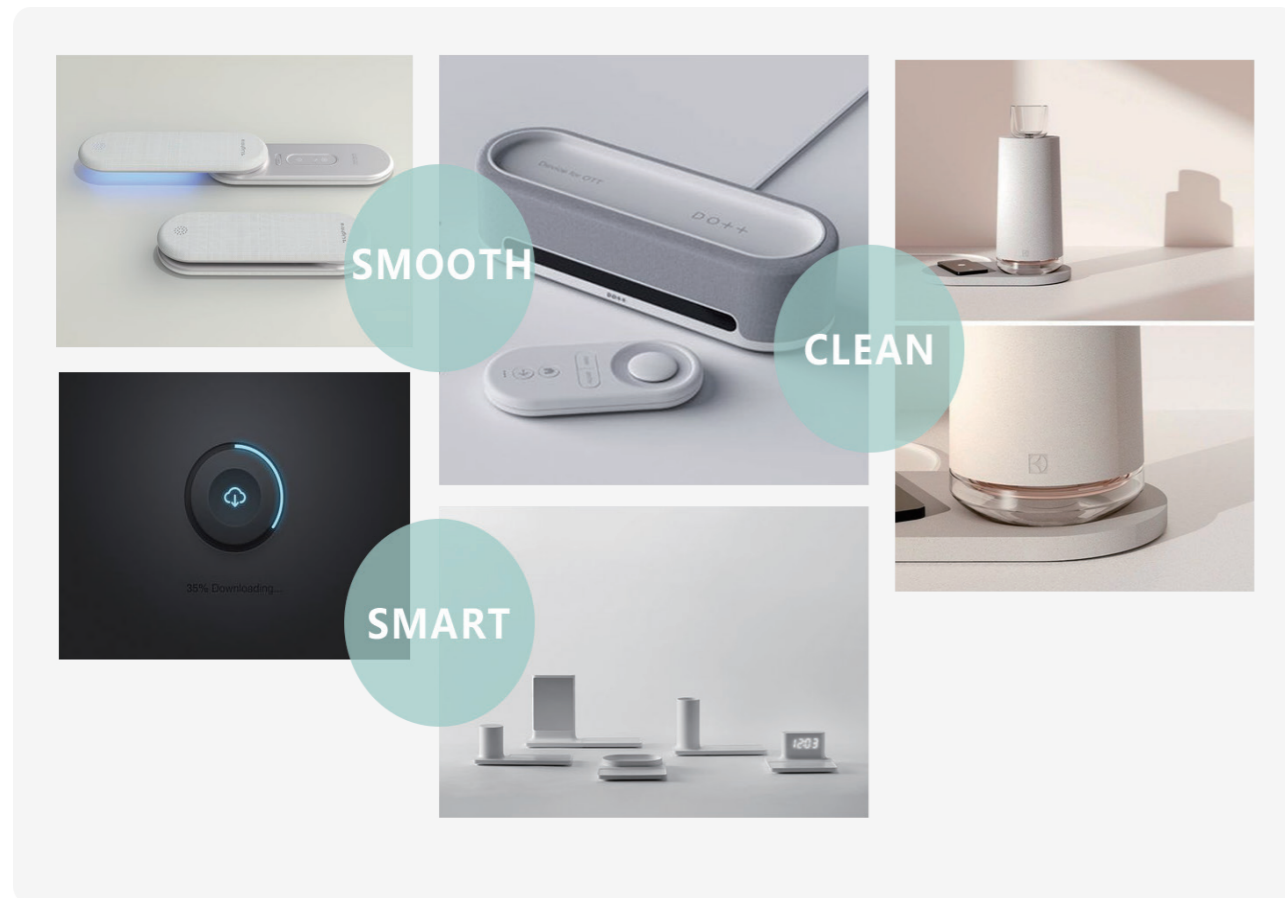
Purpose: The condiment containers complement the smart cutting board by quantifying the amount of seasonings and condiments used in recipes. This is particularly crucial in Chinese cuisine, where seasoning plays a significant role in flavor.

3. Integration with Companion App:

The smart cutting board and condiment containers work in tandem with a companion app. The app serves as a central hub for recording, storing, and sharing family recipes. It allows users to upload ingredient and seasoning data, which is then processed to create quantified family recipes. Younger users can access these recipes and replicate them elsewhere, receiving real-time guidance on ingredient quantities during the cooking process.



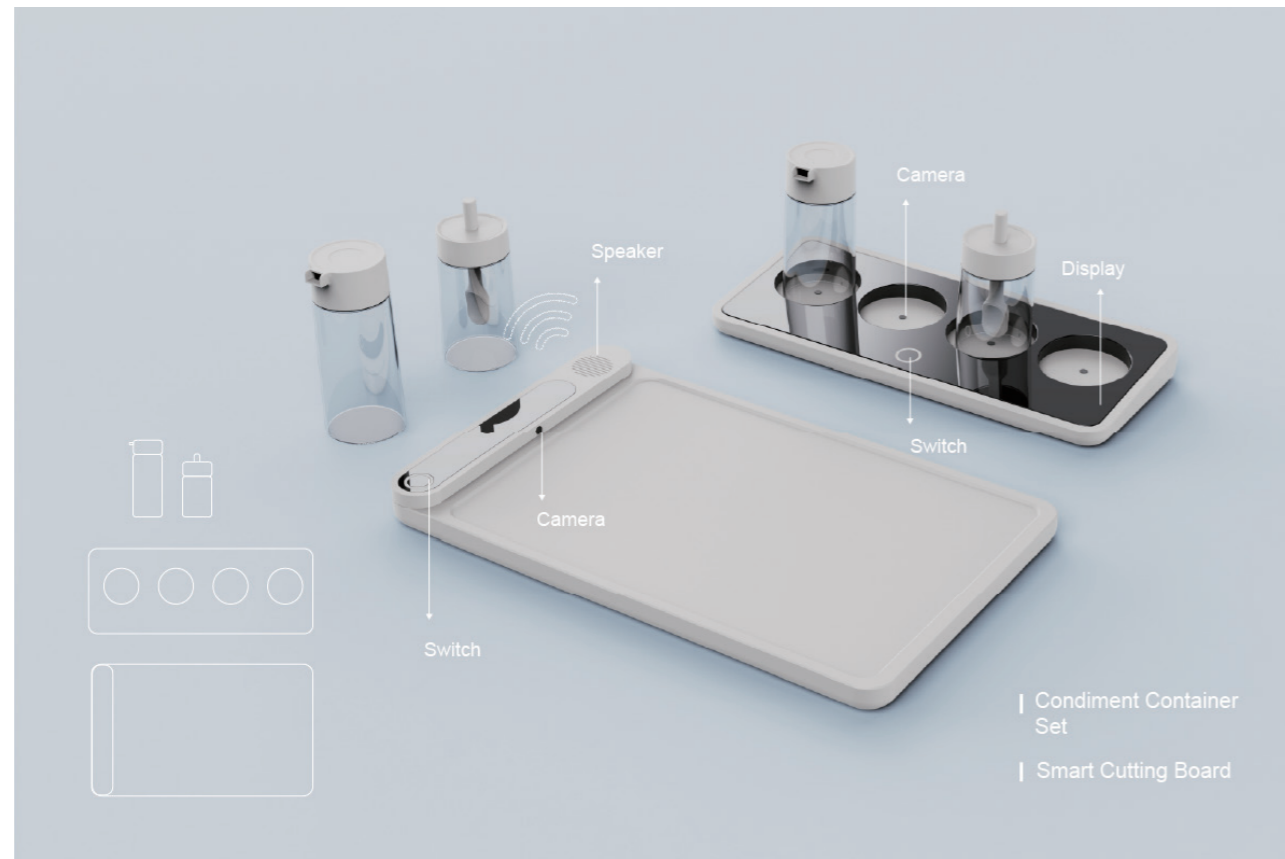
Moodboard



PART SIX

Design Pototype

6.1 3D Prototype

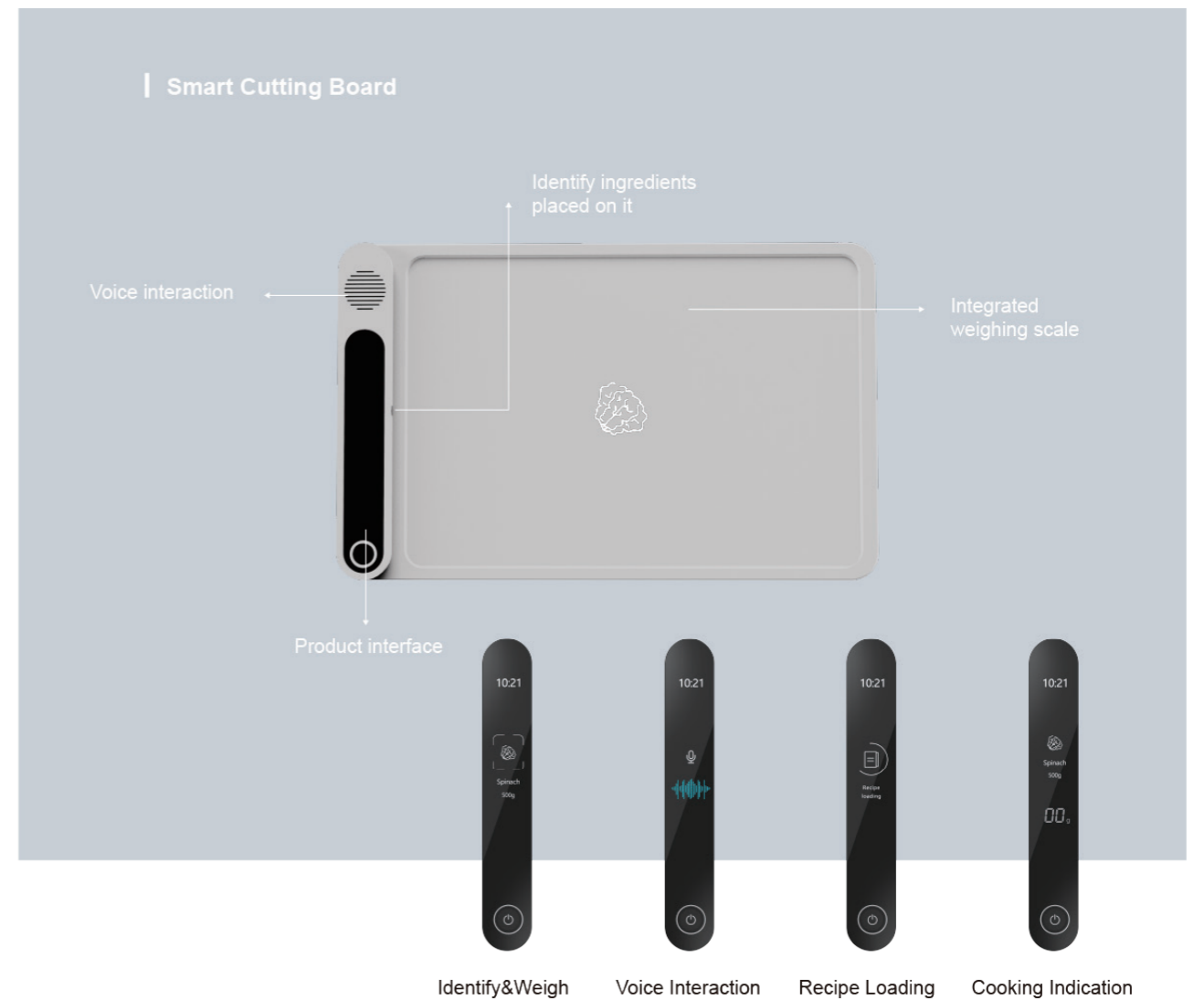


6.1 3D Prototype

Smart Cutting Board

Functionalities

- **Ingredient Identification:** The cutting board is equipped with technology that can identify ingredients placed on it. This is achieved through sensors and image recognition software. When an ingredient is placed on the board, it is identified and categorized.
- **Weight Measurement:** The cutting board has an integrated weighing scale. It accurately measures the weight of ingredients placed on it, providing precise data on the quantity of each ingredient used.
- **Data Recording:** The data related to identified ingredients and their respective quantities are recorded in real-time. This information is crucial for quantifying family recipes.
- **Wireless Connectivity:** The cutting board connects wirelessly to a companion app, allowing seamless data transfer. Older adults can easily upload the ingredient and quantity data to the app.
- **Voice Interaction:** Voice interaction simplifies the user experience and makes the product easier to use for older adults who may face challenges with smartphone use. The product features voice-activated commands and responses. Older adults can use voice input to narrate the recipe preparation process or share related stories. The product's artificial intelligence or speech recognition technology records and stores this information.





Ingredient Identification

The data related to identified ingredients and their respective quantities are recorded in real-time.



Voice Interaction

Simplifies the user experience and makes the product easier to use for older adults who may face challenges with smartphone use and input narrate the recipe preparation process



6.1 3D Prototype

Set of Condiment Containers:

Functionalities

- **Seasoning Calculation:** Each condiment container is equipped with technology to calculate the amount of seasoning dispensed. This can be achieved through mechanisms like built-in scales or sensors that detect dispensed quantities.
- **Data Recording:** Similar to the cutting board, the condiment containers record data on the amount of seasonings used in real-time.
- **Wireless Connectivity:** The containers connect to the companion app, enabling the seamless transfer of seasoning data to the recipe database.
- **Cooking reminders:** guide them through the cooking process, reminding them of ingredient quantities and preparation steps in the product.



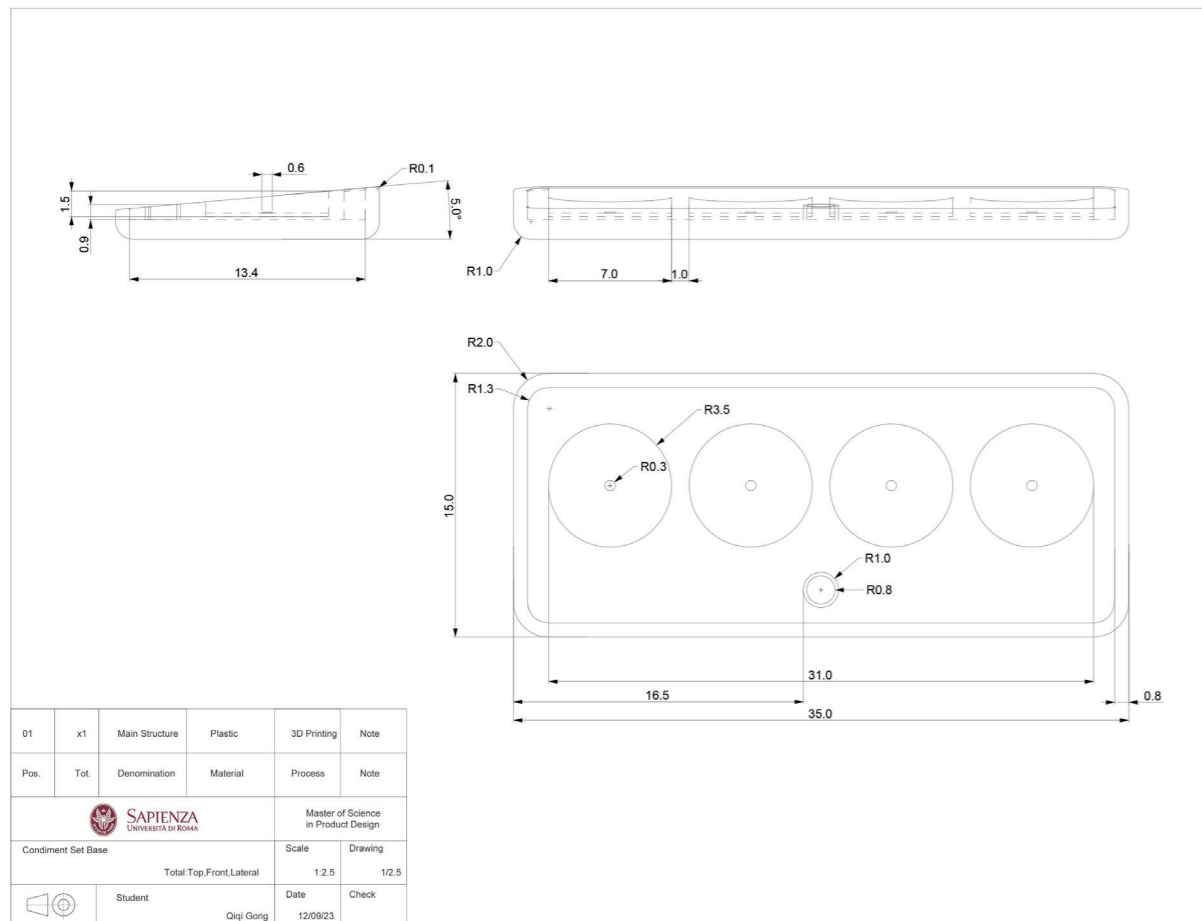
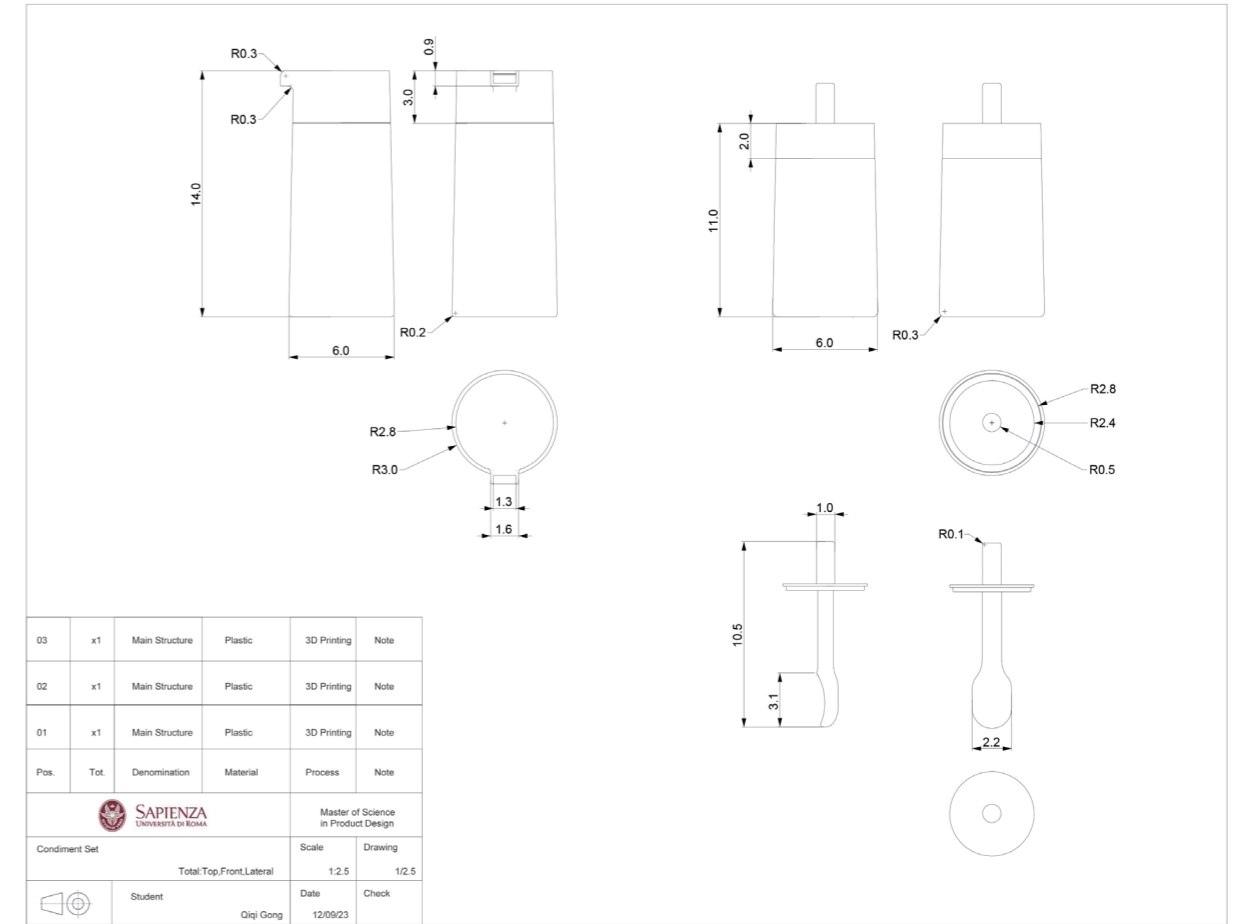
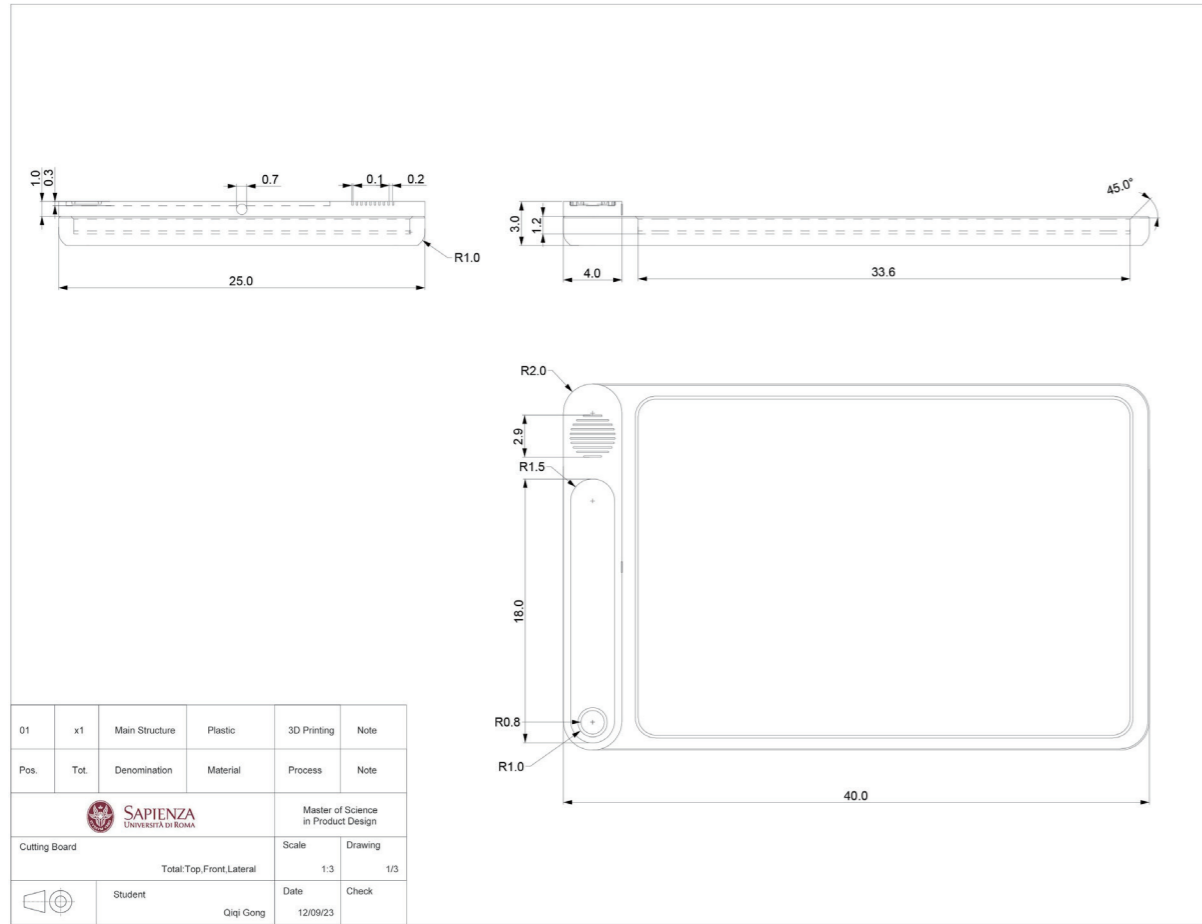
There are cameras at each hole in the base to identify the seasoning, as well as the weight, to help record.

Once loaded with the recipe, the device tells the user which seasoning is needed directly via a blue light and shows how much of that seasoning is needed on the display.

Based on the Chinese habit of using seasonings, the product is set to contain two containers for liquids and two containers for solids, the liquid containers are marked with scales, and the solid containers also comply with the Chinese habit of using seasonings (in large quantities), in the form of spoons, a spoon is 3 g.



6.2 Technical Drawing



6.3 UI Design

Low Quality

The app serves as a versatile and inclusive platform that caters to users of all ages and digital literacy levels. It not only simplifies the process of sharing and replicating family recipes but also facilitates health management, intergenerational communication, and the preservation of cultural and culinary heritage. It creates a sense of unity and mutual support within the family, fostering meaningful connections across generations.

Younger Users:

Primary User Interface: The app primarily caters to younger users who are more tech-savvy and comfortable with smartphone or tablet interfaces.

Recipe Database: Younger users can easily browse and search for family recipes within the app. The recipes are presented with clear instructions, precise measurements, and often include images to assist with cooking.

Real-Time Guidance: When replicating a dish, younger users receive real-time guidance from the app, which is based on the data collected from older family members. This guidance ensures that they follow the recipe accurately.

Communication Hub: The app serves as a communication hub, allowing younger users to exchange messages, voice notes, and video calls with older family members. This fosters emotional connections and provides a platform for sharing experiences and memories related to cooking.

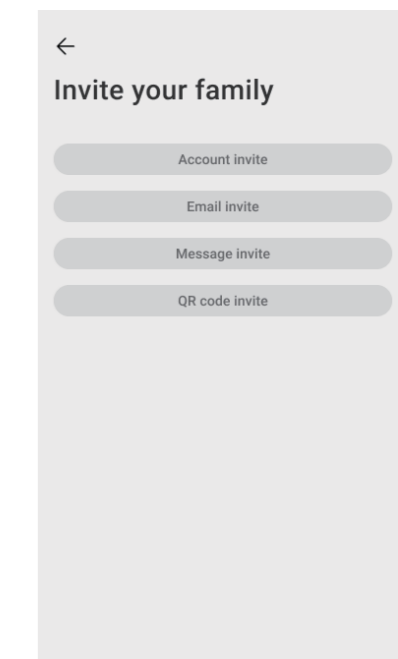
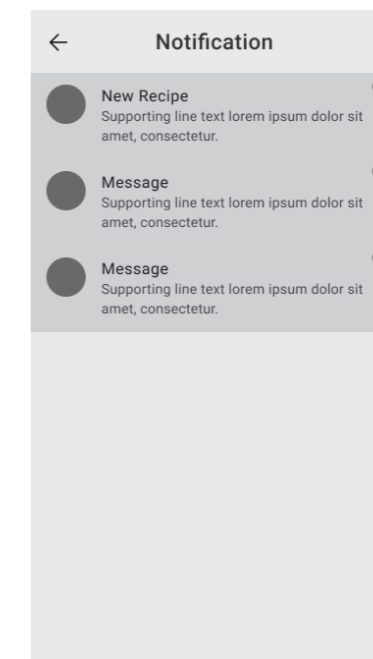
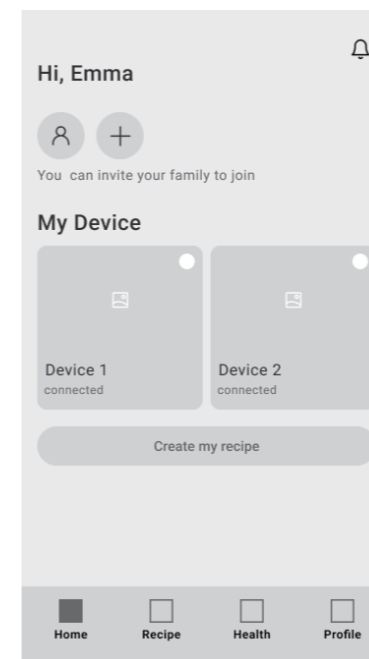
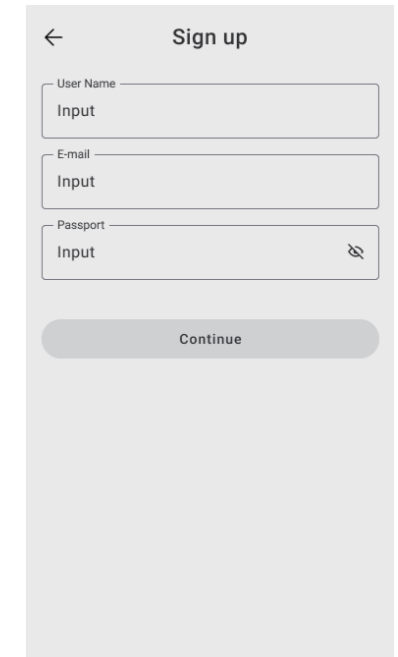
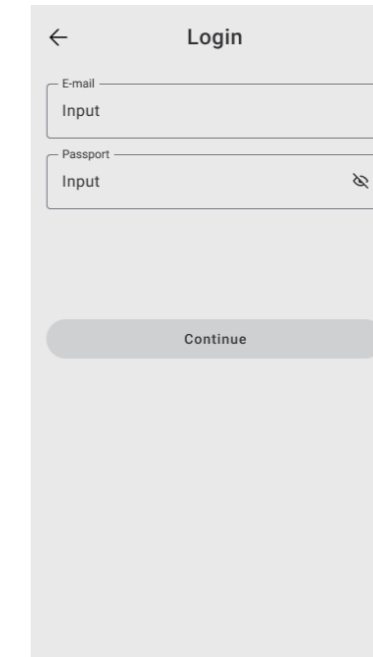
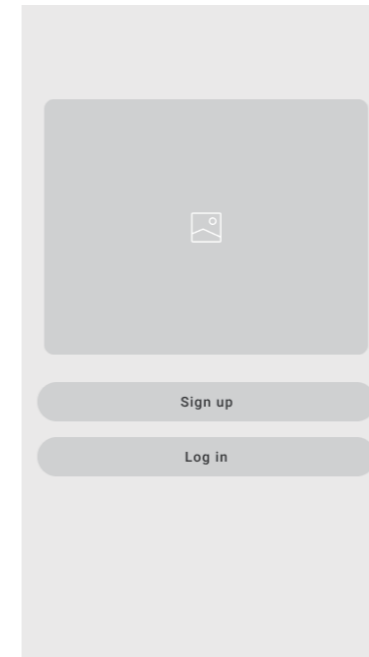
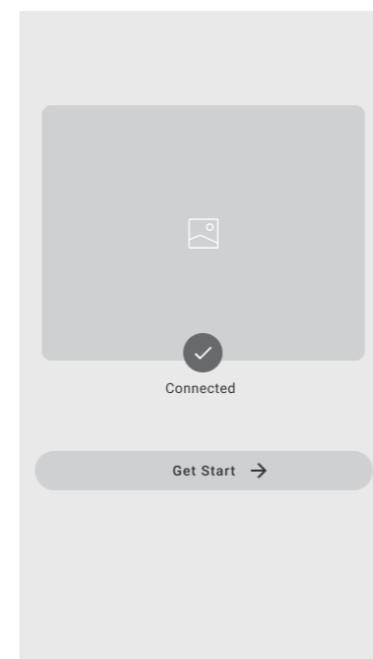
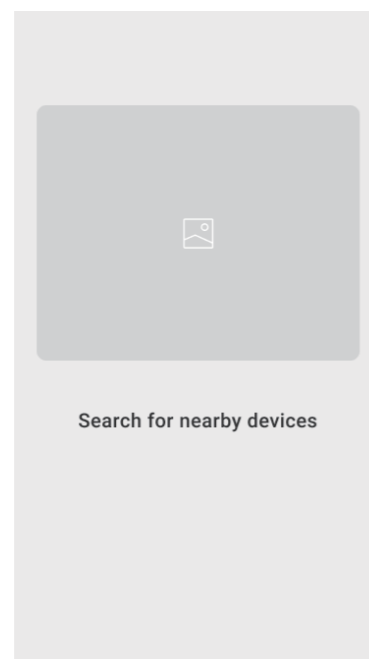
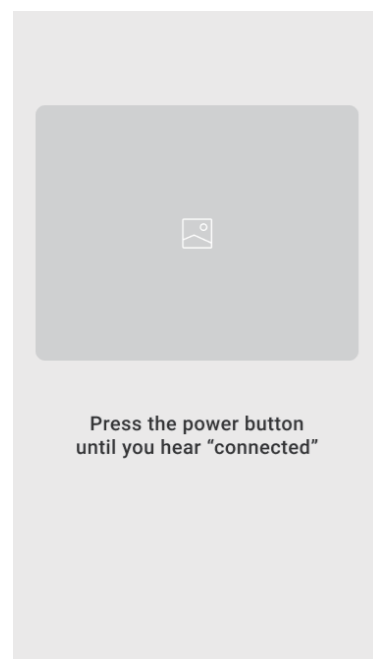
Data Sharing: They can share their cooking experiences, photographs of their dishes, and even record their own voice notes or anecdotes about the recipe preparation. This shared content is stored within the app and contributes to the family's culinary history.

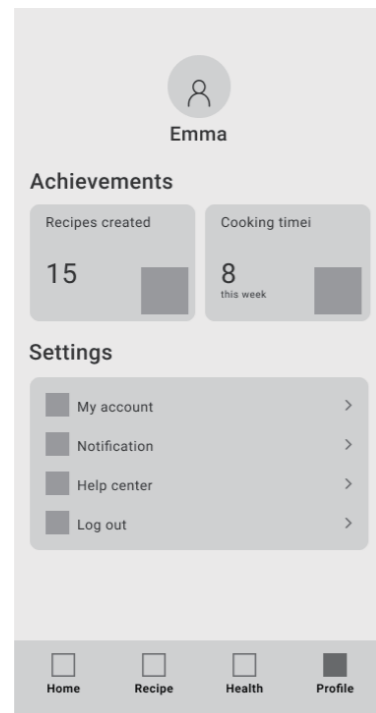
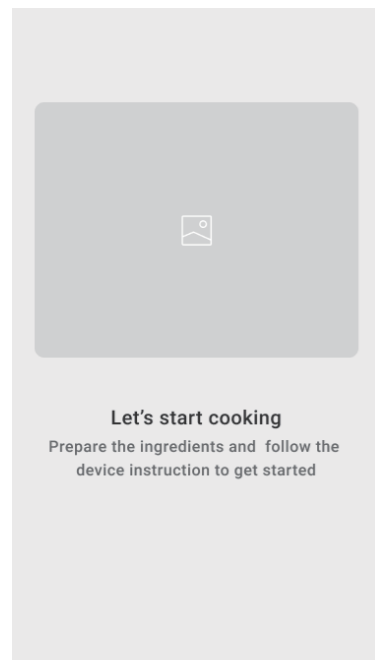
Older Users:

Digital Literacy: Older users who are digitally literate can also benefit from the app's features. They can access the recipe database, read messages from younger family members, and engage in intergenerational communication.

Voice Interaction: For older users who may have difficulty navigating the app, they can simply open the app, which will automatically connect to the smart devices (cutting board and condiment containers) that are already switched on. This simplifies the process, making it more accessible for those who may not be comfortable with complex smartphone interactions.

Receiving Updates: Older users can receive updates about their children or grandchildren's cooking endeavors, view photographs of the dishes, and listen to voice messages, fostering a sense of pride and connection.





6.3 UI Design

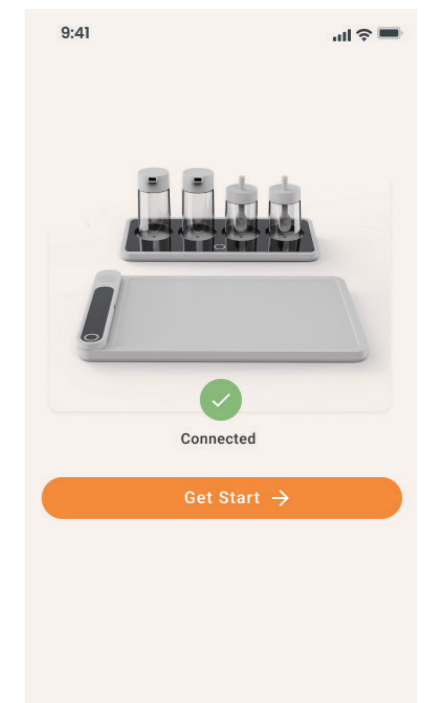
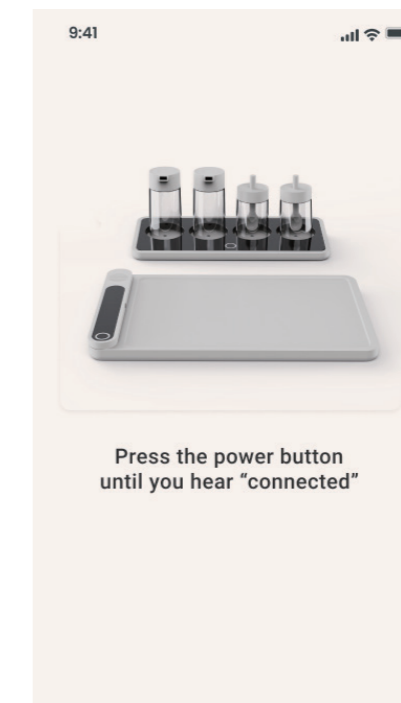
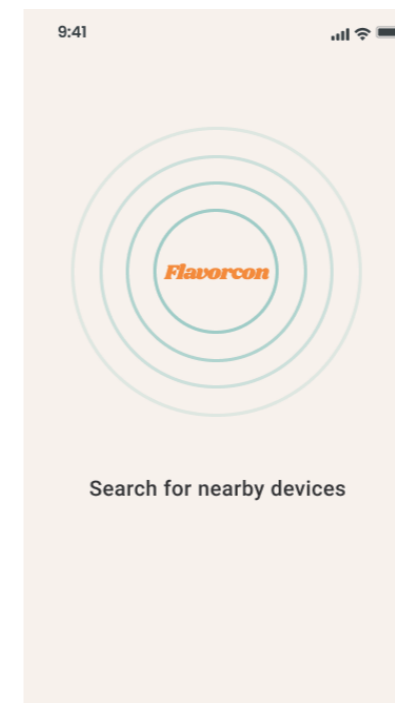
High Quality

1. Connection and Registration

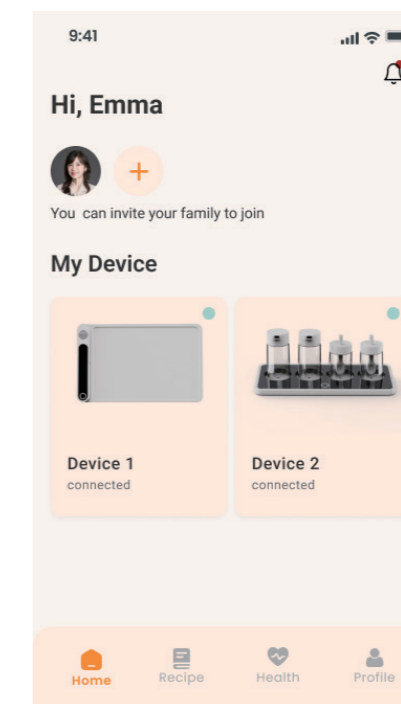
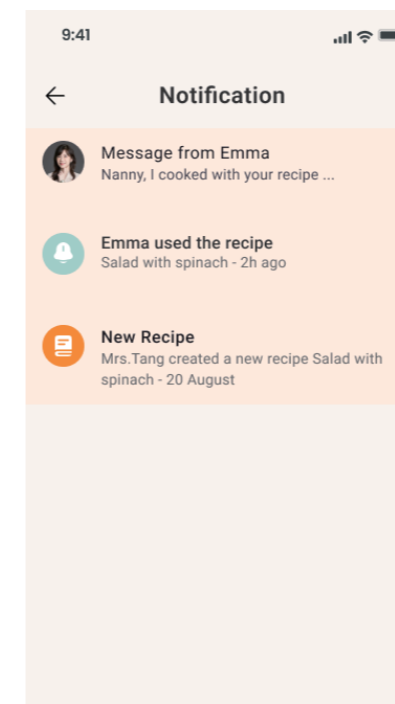
Automatic Bluetooth Connection: When users press the switch button to start the product, it initiates an automatic Bluetooth connection to the app. This seamless connection process ensures that users can quickly begin using the product without hassle.

User Registration: Unregistered users have the option to easily create an account within the app. This registration process involves providing basic information, such as name and email address.

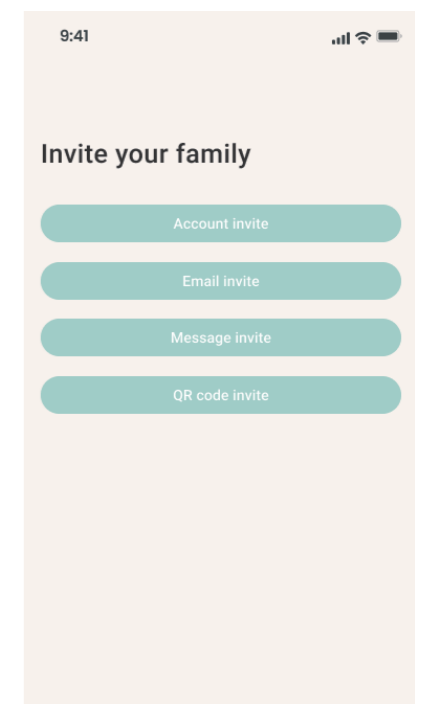
Automatic Login: For users who already have an account, the app offers the convenience of automatic login. This saves time and ensures a smooth user experience.



Automatic Bluetooth Connection



Home Page

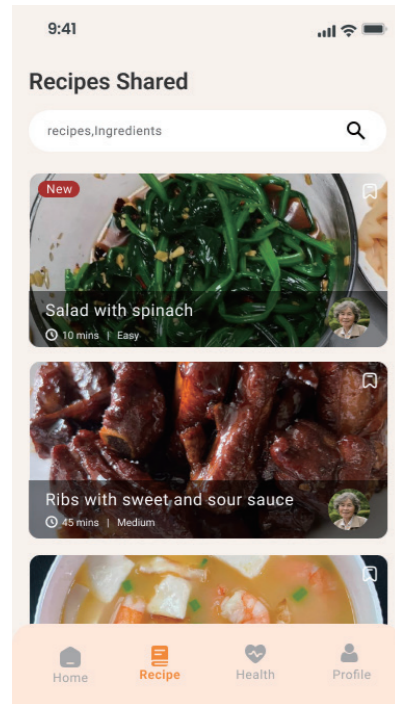


Invite Members

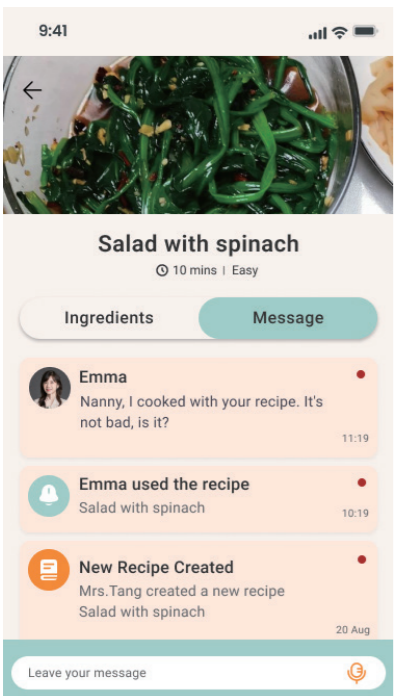
2. Home Page

Connection Status: The home page prominently displays the connection status of the product. Users can quickly verify whether the product is connected to the app and ready for use.

Shared Service: The app includes a shared service feature that simplifies the user experience, particularly for older adults. Users can invite family members to join the app, making it easier for multiple generations to interact and share recipes.



Recipe management



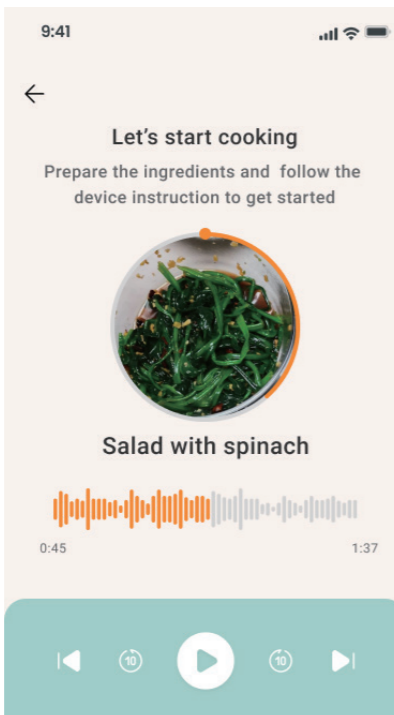
Message Exchange



3. Recipe Management

Automatic Recipe Updates: The recipe page within the app automatically updates with new recipes based on the data collected by the connected device. This ensures that users have access to the latest family recipes.

Voice Interaction Integration: The product features a voice interaction device that records the process of dish preparation dictated by older family members. This recorded content is presented in the form of voice within the recipe. Users can listen to the guidance from their elders, making it feel as if they are cooking together.



Message Exchange: Within each recipe, users can interact with each other by leaving messages related to the dish. The app allows users to exchange voice messages, adding a personal touch to their interactions. Even if older users cannot use the app directly, they can listen to voice messages from the product connected to the app.

Cooking Guidance: When users decide to cook a specific recipe, they can simply click the "Start Cooking" button within the app. This action imports the selected recipe into the connected device, preparing it for the cooking process.

6.3 UI Design

High Quality

4. Health Management and Advice

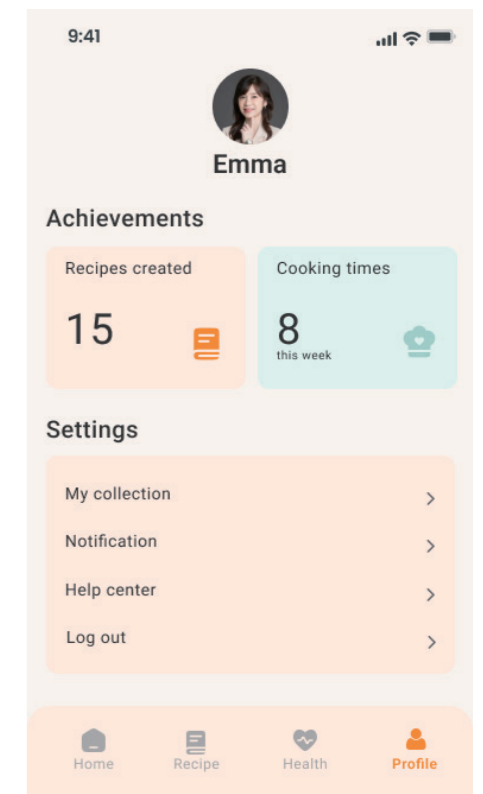
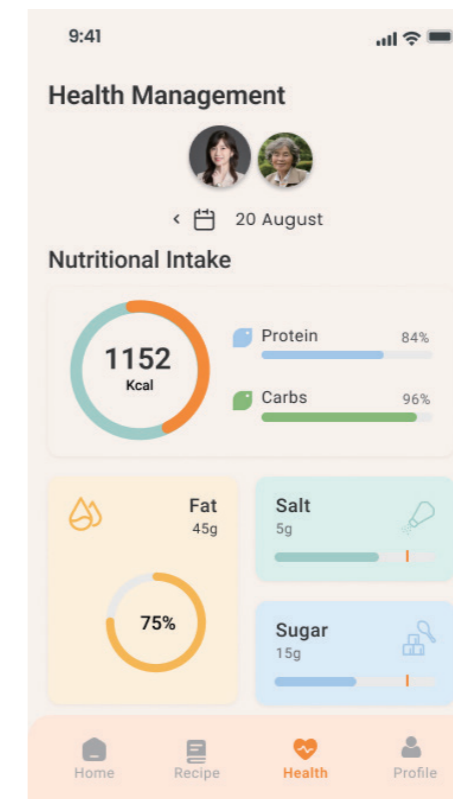
Daily Intake Analysis: The app leverages the data collected from the smart cutting board and condiment containers to provide health insights. It analyzes the dietary intake of older adults based on the ingredients used in their recipes.

Health Management: Users can view their daily intake reports and receive recommendations for maintaining a balanced diet. For instance, the app may suggest reducing oil or sugar intake based on the analyzed data.

Mutual Health Support: Older and younger generations can share their health data and receive mutual support through the app. This feature fosters a sense of care and responsibility among family members.

5. Encouraging Cooking Involvement

The profile page offers a visual representation of the number of recipes created and the frequency of their usage within the family. This visual progress motivates a sense of achievement among users. Users are motivated to actively participate in sharing, replicating, and documenting family recipes.



Flavcon

COLOR



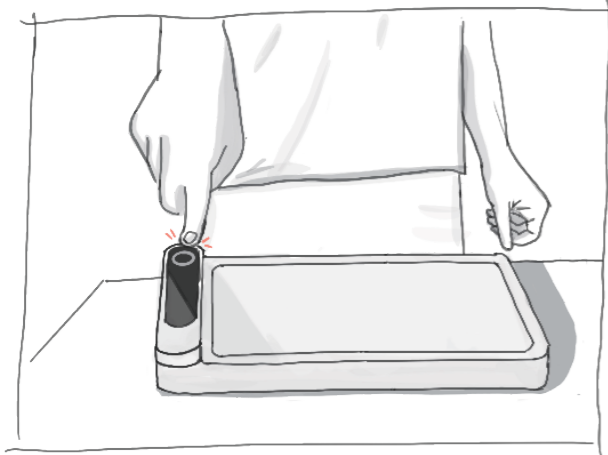
ICON



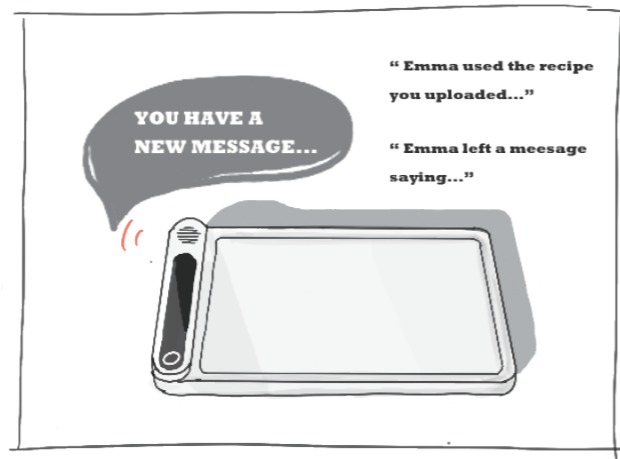
FRONT

Robot Aa Aa Aa

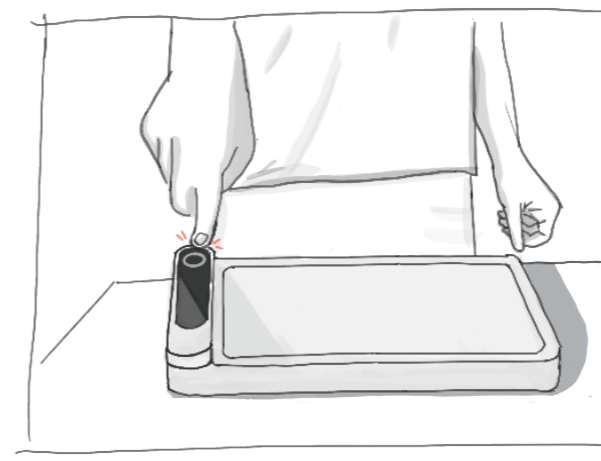
6.4 Storyboard



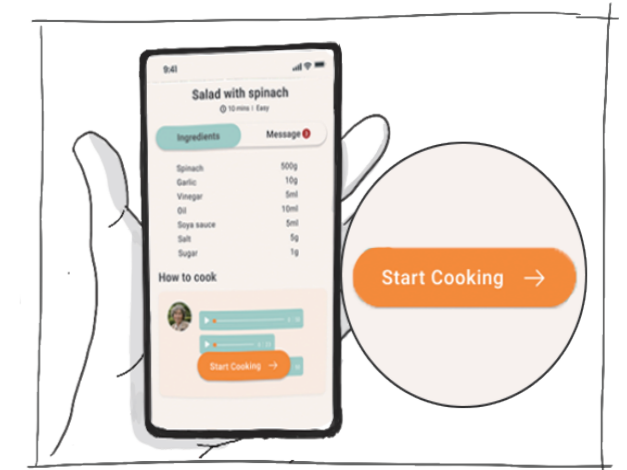
Long press to start, waiting for device connected



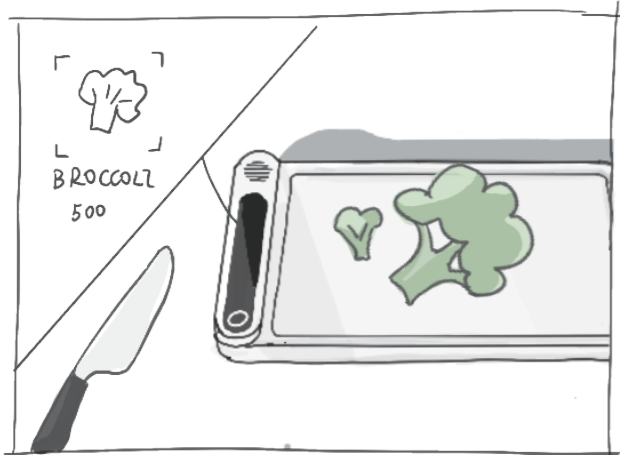
Voice Message Reminder



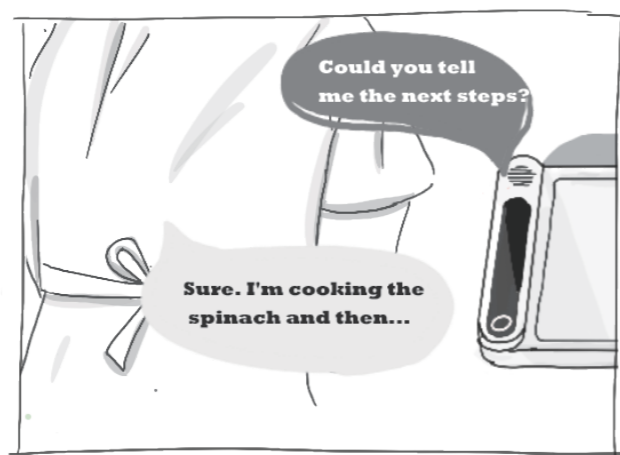
Long press to start, waiting for device connected



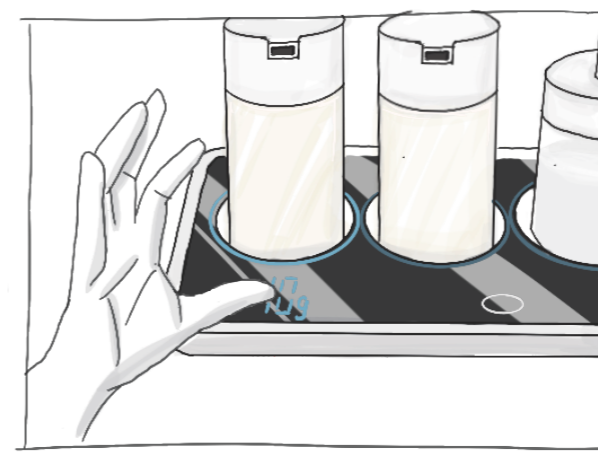
Import app recipes to your device and start cooking!



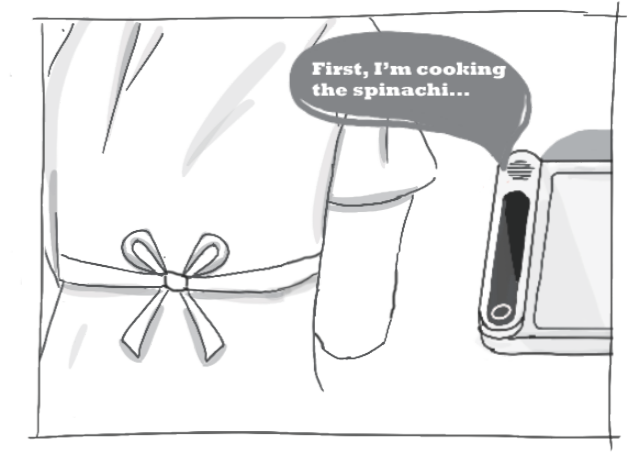
Identifies ingredients and records weights



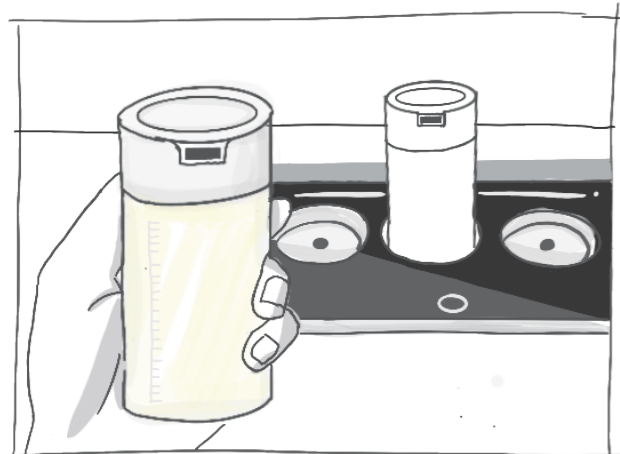
AI voice interaction to record the cooking process



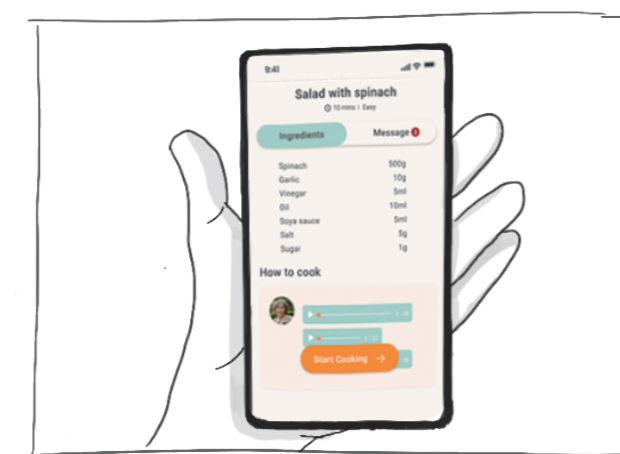
Real-time alerts on the weight of ingredients and seasonings used



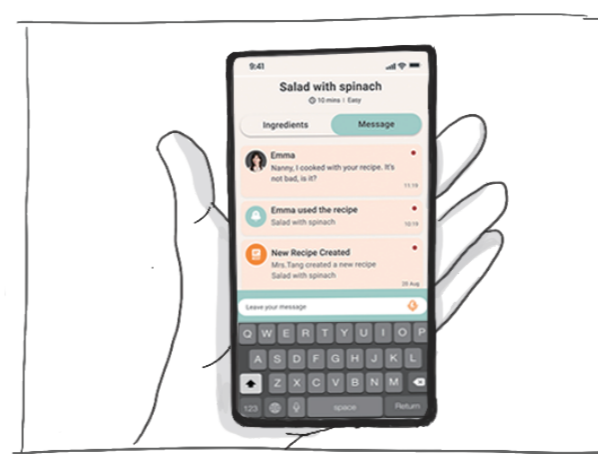
Real voice instructions from the recipe creator



Seasoning identification and use records



Data records are uploaded to form recipes



Actions taken with the recipes are recorded and can also be interacted with by leaving a comment!



View your own and your family's dietary intake, and health management

Conclusion

All in all, the design of this smart kitchen device and its accompanying app represents a major leap forward in bridging the generation gap, preserving family cooking traditions and promoting healthy cooking and living. Linking two generations through taste memory is also a motivational tool that encourages active participation in cooking, fosters a sense of achievement and strengthens family bonds. It also empowers users to make careful choices about what they eat and how they live, laying the foundations for healthier, closer family life.

Key Elements of the Design. The design empowers older individuals by allowing them to seamlessly record family recipes without disrupting their familiar practices. It, in turn, strengthens the connection between generations. For younger users, the app encourages the development of healthier eating habits by providing access to nutritious family recipes. This promotes a balanced and health-conscious diet. And, the design acts as a skill development platform for younger users, enhancing their culinary prowess as they replicate family recipes and learn the art of cooking. By enabling intergenerational recipe sharing, the app fosters stronger family bonds. It encourages communication between different age groups, facilitating shared experiences and stories.

The design effectively bridges the generational gap, facilitating intergenerational interactions through the sharing of cherished family recipes. By digitizing recipes and stories, the app ensures the preservation and transmission of culture and family traditions, safeguarding them for future generations. Besides, the app plays a pivotal role in promoting a healthier lifestyle by encouraging the adoption of nutritious cooking and dietary choices, thereby enhancing overall well-being. It acts as a catalyst in strengthening emotional bonds within families by promoting communication and shared experiences, ultimately reducing feelings of isolation. In addition, the app has been thoughtfully designed to cater to users of varying digital literacy levels, ensuring that it is inclusive and user-friendly for individuals of all ages.

Of course there are still some issues with the design that need to be discussed. The design, while promising, does not fully realize its potential and may benefit from added features to enhance its functionality. There is also room for improvement in terms of addressing specific usage habits and preferences, especially concerning older users. A more tailored approach could be considered.

To further enhance this design and address its limitations, we can consider the following future directions. First, expanding the functionality of the app to meet a broader range of user needs and expectations. This could include features for tracking nutritional information, meal planning, and more. A focus on further integration with smart kitchen devices can simplify the cooking process for all users, providing step-by-step guidance and assistance. Moreover, incorporating interactive learning elements that encourage younger users to not only replicate family recipes but also explore the cultural and historical context of these dishes, fostering a deeper appreciation of their heritage. Creating a sense of community around the app by connecting users with similar interests and values, thereby encouraging engagement and knowledge sharing among users.

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Appendices

Appendice.1 Qualitative interview content

Interview

TITLE: Interview with older adults about interactions with younger adults and family recipes
Thank you for agreeing to participate in this interview. Your experiences and insights about
interacting with the younger generation and family recipes are invaluable. Please feel free to share
your thoughts openly and in detail.

Demographic information:

1. Age:

2. Gender:

3. Location (city, country)

Part I: Family life and interaction with young people

1. Please describe yourself, the composition of your family members and with whom you usually
live?

2. Can you describe the nature of your interactions with younger family members (e.g.,
grandchildren, children, nieces, nephews)? How often do you interact with them?

3. In your opinion, what challenges or differences do you notice when communicating or
connecting with younger generations?

4. Can you share a memorable experience connecting with a younger family member? What made
the interaction special or meaningful?

Part II: Family Recipes

1. Please select a recipe that you would like to share. Please try to describe the main flavors of the
dish and the steps taken to prepare it. We also encourage you to share any personal stories or
memories about the dish.

2. Have you shared recipes with youth before? If so, please talk to me about your experience.

3. Is this an everyday recipe or a special occasion recipe?

4. Is this a recipe you inherited from a relative, a recipe given to you by a friend or coworker, or a
recipe shown in a recipe book, magazine, newspaper, or online?

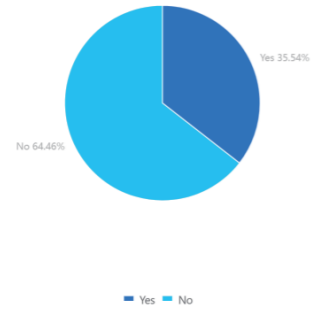
7. Do you enjoy sharing recipes with young people? Why?

8. What do family recipes mean to you?

Conclusion: Thank you for sharing your insights and experiences in this interview. Your views on
interacting with young people and family recipes give us valuable insight into the importance of
intergenerational connections. If you have any additional thoughts or anecdotes to share, please
feel free to do so. Thank you so much for your participation!

Appendice.2 Questionnaire

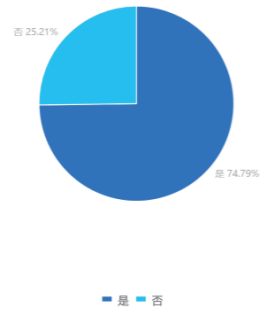
Have you ever tried to reproduce a family recipe yourself? If so, how did it turn out?



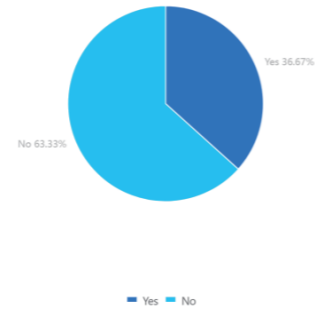
Have you ever learned how to cook or prepare a family recipe from an older family member?



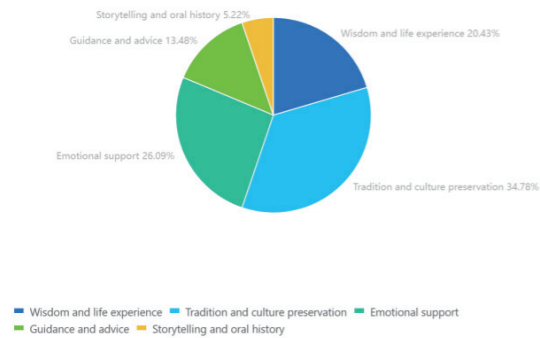
Are you interested in cooking skills for older family members?



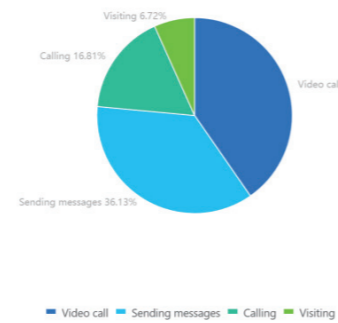
Is there a specific home-cooked (or traditional) dish that has special meaning to you or your family? If so, please elaborate (what is it and why?)



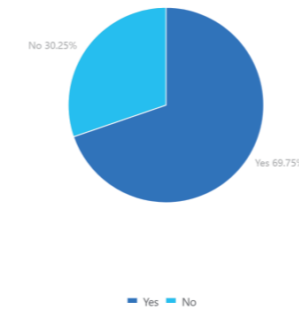
In your opinion, what positive qualities do older people bring to a family or community? (Check all that apply)



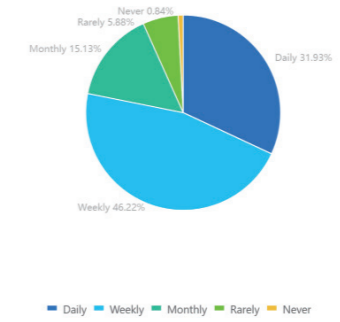
How do you manage to stay connected to the lives of your older family members?



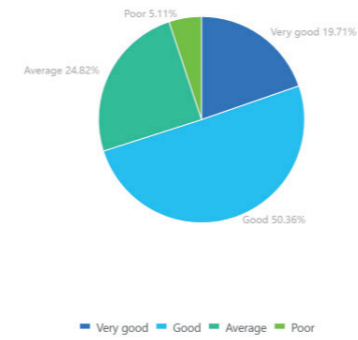
Do you keep in touch with older family members less frequently because of living distance?



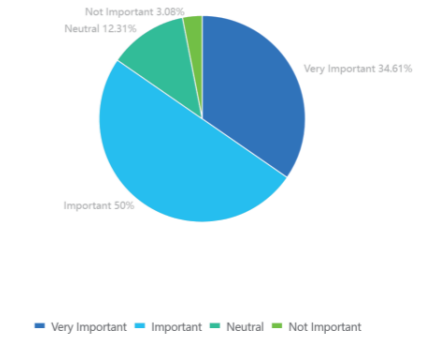
How often do you interact with older family members?



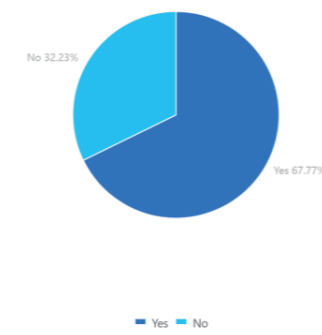
How would you rate your cooking skills?



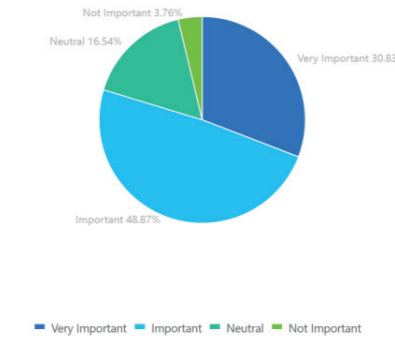
How important do you think it is for young people who are away from their families to stay in touch with older family members?



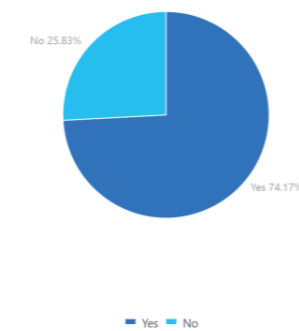
Do you believe that cooking or sharing family recipes can help bridge the gap between you and your family? Why or why not?

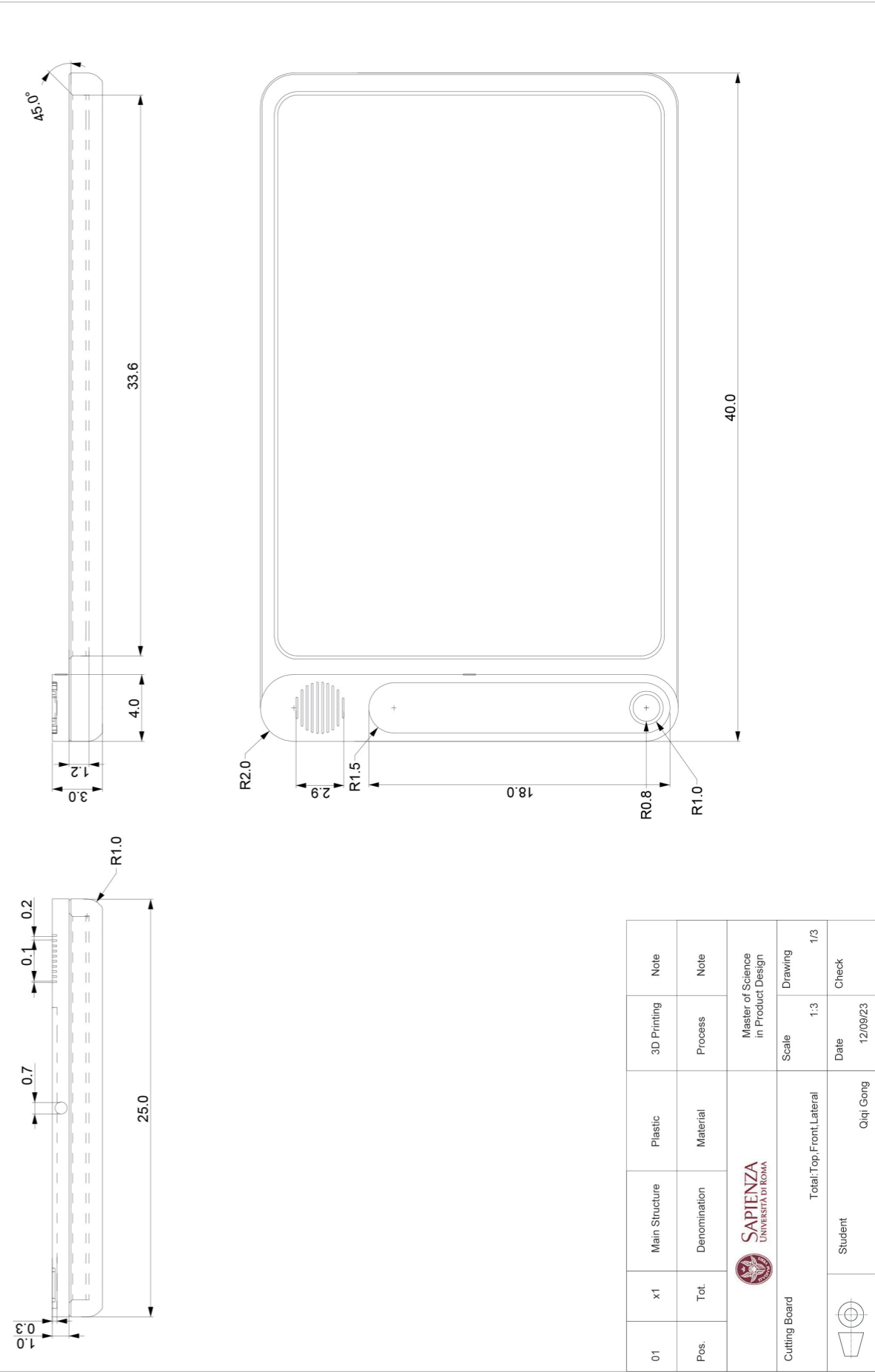
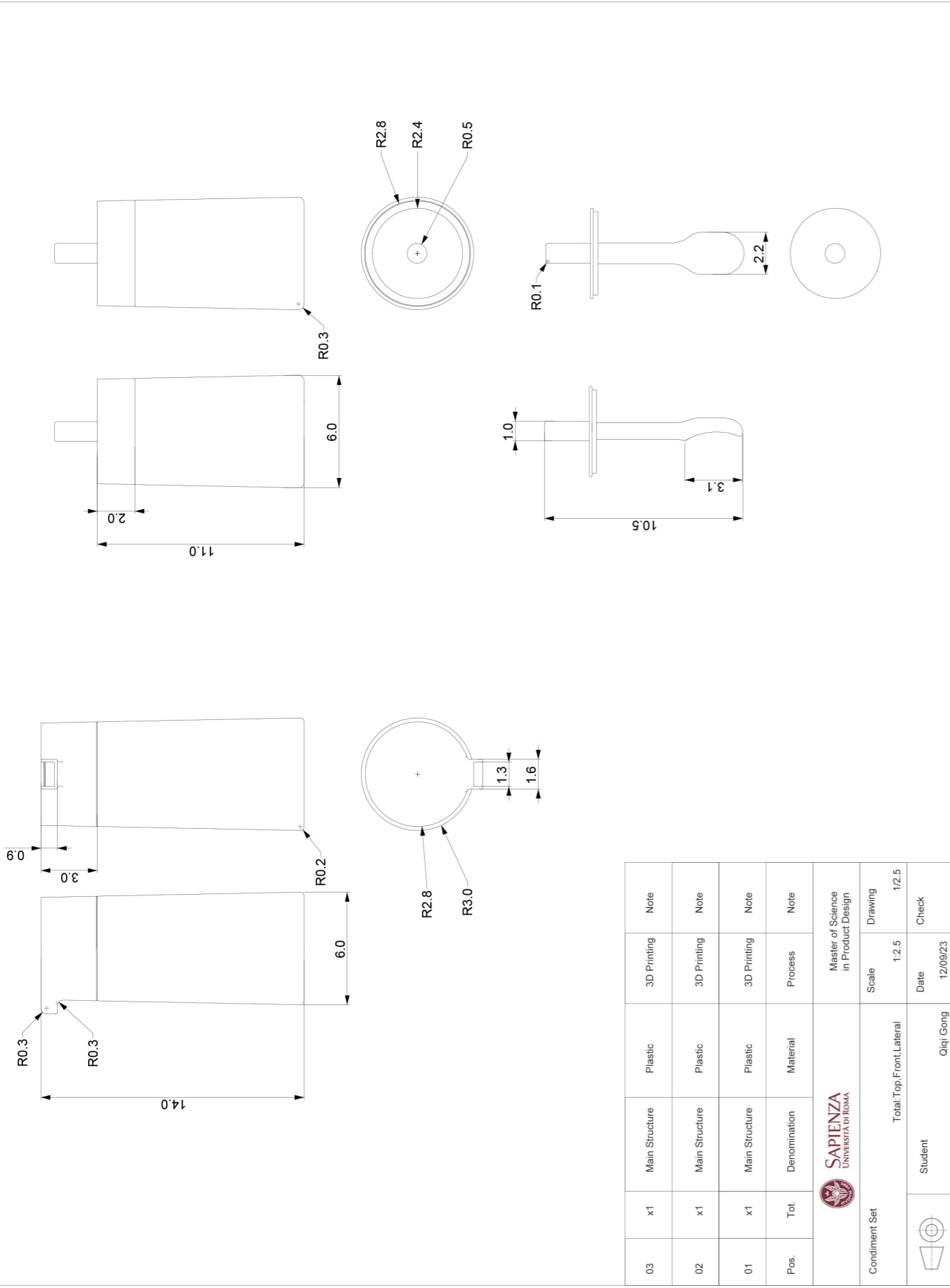


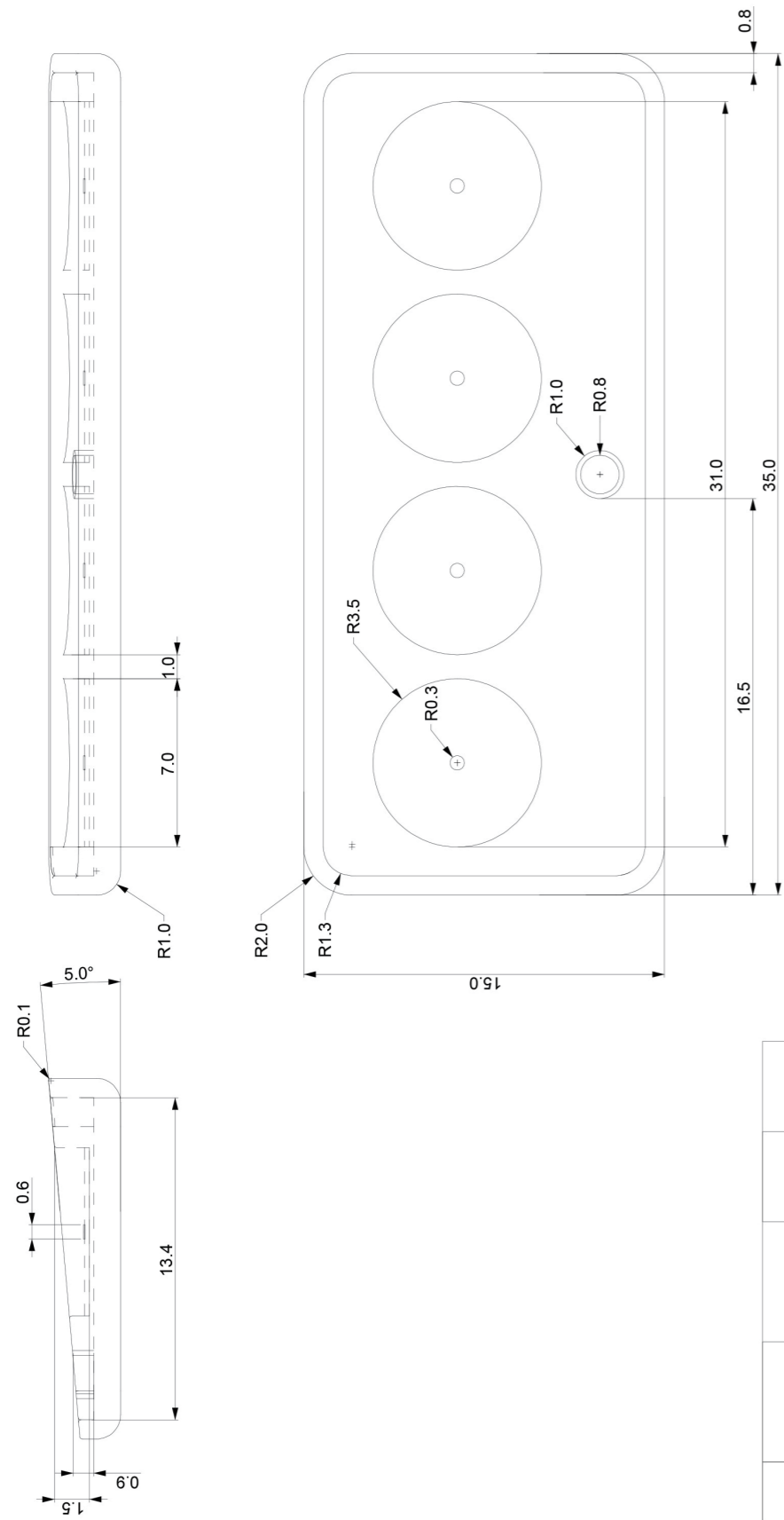
How important do you think it is to pass down family recipes to younger generations?




Does cooking or eating family recipes evoke emotions or memories for you?







01	x1	Main Structure	Plastic	3D Printing	Note
Pos.	Tot.	Denomination	Material	Process	Note
		 SAPIENZA UNIVERSITÀ DI ROMA	Master of Science in Product Design		
Condiment Set Base			Total: Top, Front, Lateral	Scale	Drawing
		Student	1:2.5	1/2.5	
		Olqi Gong	Date	Check	
			12/09/23		



SAPIENZA
UNIVERSITÀ DI ROMA

Master of Science in
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a.y. 2021-2023

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