

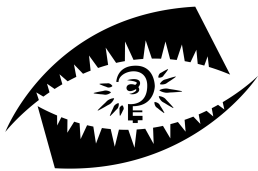
# Amma Ka Dabba

## Informative Meal planner to promote nutrition

Names : Vedula Sri Gayathri, Kalyani Kumawat

Student ID : 202114008, 202114017

Guide : Prof. Binita Desai



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## Feedback

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## 1. INTRODUCTION

The lunch box is not just a mere container for food. It is an expression of love and care, particularly for mothers and their children. Preparing and packing a lunch box can carry a range of cultural meanings and symbologies worth exploring in greater detail.

One way in which the lunch box can carry significance is through the foods that are chosen for it. Traditional dishes from a particular region or country can be included in the lunch box, helping maintain a sense of cultural identity and nutritive quality. In this way, the lunch box symbolises home and family, connecting parents and children even when they are apart.

Beyond the food, how the lunch box is packed can also carry meaning, emphasising nutrition and organisation. Carefully arranged and packed lunch boxes can be seen as a reflection of these values.

Accentuating the cultural significance of the lunch box can also involve exploring the gendered dimensions of this practice. The act of packing a lunch box is associated primarily with mothers, who are expected to provide nourishing meals for their children, broader societal expectations around gender roles and the responsibilities of motherhood. A more nuanced understanding of the ways in which food and family intersect with broader societal expectations and values.

The items they prepare for lunch teach kids about their culture and traditions, and eating meals with friends and classmates

can help them feel more connected to one another and part of the community.

The lunchbox is an additional opportunity for parents and other individuals who care for children to talk to them about nutrition and healthy eating habits. Parents may better help their kids understand the need for a balanced diet and the value of a good dinner by giving their kids healthful lunches and snacks.

Better education on healthy food options and consumption practices is necessary to enhance the lunchbox experience for kids. Resources and educational materials on subjects like portion control, the advantages of whole meals and fresh produce, and methods for persuading kids to try new, healthy foods can be included in this.

Additionally, providing advice and pointers for making exciting and entertaining lunch box meals, such as using colourful fruits and vegetables, including protein-packed snacks, and experimenting with various textures and flavours, might be beneficial. Children may be more likely to form favourable associations with healthy foods and eating habits if lunchtime is pleasurable and exciting for them.

In the end, the lunch box might hold various memories and cultural connotations, but it can also be a potent instrument for encouraging children's health and well-being. By giving parents and carers better information and assistance, we can ensure that the lunch box remains sustenance and connection for future generations.

Another multisensorial structure that appeals to all of our senses is the lunch box. It communicates with our senses of sight, touch, taste, smell, and sound. It is a tangible and engaging item. Each sensory encounter helps us appreciate and enjoy food more fully overall.

From a visual standpoint, the lunch box can provide a variety of hues, textures, and shapes that enhance the food's appeal. For instance, using vibrant fruits and vegetables can result in an aesthetically beautiful and filling dinner. A pleasing and calming sense of order and structure can also be created by setting the food inside the lunchbox.

The lunch box offers a tactile sensation that appeals to our sense of touch. The texture and consistency of the food can significantly influence our enjoyment of the meal. For instance, crunchy foods like fruits and vegetables or soft and chewy treats like cookies can alter the feelings we feel in our mouths and enhance our sensory experience.

Another important aspect of our appreciation of food is our sense of smell. Our senses might be awakened, and our appetites increased by the perfume of the food. We sometimes look forward to lunch because of the aroma of new bread or a fragrant fruit. The most evident sense experience connected to the lunch box is taste. The various textures and fragrances of the meal can improve its flavour, resulting in a pleasurable and varied sensory experience.

Last but not least, the lunch box may produce sound. The sound of crunching or chewing the food can be delightful and

satisfying, as can the act of opening and closing the box, which can provide a satisfying clicking sound. Overall, the lunch box is a multi sensorial design that appeals to all our senses and increases how much we enjoy our food. We may design more rewarding and delightful eating experiences by paying attention to the lunch box's visual, tactile, olfactory, gustatory, and aural aspects.

The product's outside packaging significantly influences kids' willingness to consume food. Packaging is frequently the first aspect of the food that children notice, and it significantly impacts whether they choose to eat it or not.

When selecting a food item, kids often give the visual appeal much weight. Kids may find food more enticing and more likely to consume it if it has vibrant colours, unique forms, and attractive designs. Because of this, many food businesses create their packaging with children in mind, employing cartoon characters and other appealing graphics to catch their attention. The packaging, however, may also discourage children from eating particular foods.

The information on the container can also influence kids' decisions to eat the food. Kids may be more inclined to select healthier and more nutritious meals if the nutritional information, such as the calorie count or the quantity of sugar, is displayed on the box. The packaging may also impact children's psychology. For instance, if a box prominently features a particular brand or character a child dislikes, it might discourage them from eating that product.

Overall, their outer packaging can significantly influence whether or not youngsters choose to consume food goods. Parents and food producers may encourage youngsters to make healthier and more fun food choices by considering the aesthetic appeal, the information presented, and the psychological consequences of packaging. As parents work to prepare wholesome meals while also considering their children's tastes and preferences, food rules are frequently bent for children in various ways. Here are a few typical instances: **Vegetable concealment:** Pureeing and incorporating them into smoothies, soups, and sauces. This improves the food's flavour while ensuring that children receive the required nutrients.

**Giving children options:** Giving children the ability to select from various nutritious options will help them feel in control and create their eating preferences. **Making food fun:** When healthy meals are presented to children in a playful and aesthetically pleasing manner, they are more inclined to consume them. This can entail forming sandwiches into amusing shapes using cookie cutters or arranging fruits and veggies into a vibrant rainbow. While it is essential to promote healthy eating habits, it is also acceptable for kids to indulge in treats occasionally. This can help avoid deprived feelings and encourage a positive relationship with eating.

Overall, bending the laws of nutrition for children can entail innovative methods to make healthy foods more enticing while still allowing for occasional treats in moderation.



## 2. Problem Statement

Children's healthy physical and mental growth depends on a proper diet. An adequate diet fosters cognitive development, stimulates growth, and fortifies the immune system. Children who eat healthily are more likely to perform better in school and experience better results with their mental health.

Gujarat has a high prevalence of malnutrition among children under the age of five, according to the National Family Health Survey (NFHS) 5 conducted in 2019–20. 33.3% are underweight, 16.5% are wasting, and 37.4% are stunted. Snacking culture in Gujarat is also very prominent, that the fast foods are also affecting kid's lunch boxes. Promoting children's healthy eating behaviours is essential to addressing this problem since these behaviours significantly impact kids' immunity, metabolism, and general physical and mental health. By solving this issue, we can lower the prevalence of hunger raise and growth issues, improving school work and daily activities. In order to improve the health and well-being of Gujarat's children and address the high prevalence of malnutrition, it is crucial to promote good eating habits among young people in the state.

Parents strive to provide their children with nutritious food. Despite the significance of good nutrition, some parents may need help to give it to their kids for various reasons. It can be tricky for parents to correctly feed their children due to a lack of nutrition education. Economic and cultural issues may also be necessary, as some families may have financial or cultural

habits that prevent them from accessing healthful foods. Both of the parents could be working and it could not be feasible for them to invest time in making healthy meals for their children because of their nags. It could be very tiresome to think of an interesting meal for a child everyday.

It is crucial for parents to prioritise their kids' nutrition and to look for tools and support to guide them in making good decisions. This can involve looking out for reasonably priced healthy food options, speaking with a paediatrician or qualified dietitian, and learning about nutrition from educational materials. Overall, a complicated relationship between food and children's health considers both physical and emotional results. Parents significantly impact their children's ability to develop healthily and acquire sufficient nutrition.

The following are some restrictions that may have an impact on how a lunch box is planned using various criteria:

**Length of the lunch break:** The length of the lunch break may restrict how much time a child has to consume their lunch. Pack meals that can be quickly and easily consumed, like sandwiches or wraps, if the lunch break is brief. Possibility of Eating in Public: It can be challenging to pack a lunch box if the child's school or place of employment forbids certain meals or if the youngster feels uncomfortable eating particular foods in public. For instance, some schools forbid nuts because of allergies, while others might forbid foods with overpowering odours.

**Nutrition Content:** Parents must ensure that the child's lunch box contains adequate nutrients to maintain his or her energy levels throughout the day in terms of nutrition. This can be a constraint when attempting to strike a balance between nutrition, flavour, and variety. Parents should eat healthy to set an example for their children, since a child starts to pick habits through parents influence.

**Demands and Tastes of Children:** Children can be pretty fussy eaters. Therefore, parents may need to accommodate these preferences when preparing the lunchbox. This can be difficult when attempting to offer the child a range of healthy foods they will actually eat. Some might need special attention to food for health reasons like allergies or diabetes ect.

**Occupation and Place:** The occupation and place where the parents belong can also impact lunch box planning. For example, if the parents work in an office, they may have access to a fridge and microwave, which can broaden the options for packing lunch. However, if the parents work on a job that requires them to be on the go, then they may need to pack foods that are more portable and can be eaten on the move.

**Place and Occupation:** The parents' occupations and places of residence may impact lunchbox preparation. For instance, having access to a fridge and microwave at work could increase the variety of lunch alternatives for parents. However, if the parent's line of work requires them to travel frequently, they may need to pack meals that are easier to transport and consume while travelling.

**Kids' Standard and Consuming Capacity:** Children have a range of Standard and Consuming capacities, making lunch box packing challenging. While some children might need more significant portions or snacks throughout the day, others might only require a small snack to sustain them.

**Seasonality:** It is essential to consume foods that are available in specific seasons to ensure the proper nutrition intake required for climatic conditions of the season.

Lunch box planning can be a complex task that requires balancing various constraints and considerations to ensure that the child has a nutritious and enjoyable meal.

There is food and feed, says anthropologist Roberto Damatta. Food is more than just fuel; it also represents a method, an aesthetic, and a way of eating. What is consumed and how is determined by how it is consumed. Feed is viewed as disgusting, whereas food is a refinement of the body and the mind; the feed is wild, whereas food is domesticated; the feed is an animal's inclination by nature, whereas food is civilization. Not all food is healthy, moral, or ethically or scientifically acceptable. The idea of a balanced meal is hampered by consuming junk food or industrial fast food as a reward rather than as food.

Children who consume too much food are becoming more prevalent every day. These figures dramatically increased during the covid epidemic because children ate more food and engaged in fewer physical activities. On the other hand, India's hunger is a severe social problem that is escalating rapidly

every year. In India, the number of undernourished individuals and children is rising. There is an imbalance between these two groups of children. In addition to those who waste a lot of food, some are food insecure. The number of children who are in good health is declining. Therefore, educating individuals about healthy and appropriate eating habits is crucial. People who are unaware of the proper food pairing practices replace fresh food with processed foods (such as ketchup, fries, jams, and cheese spread)

Kids of present generations and upcoming generations who belong to middle class and upper class economic families are more inclined towards non-consumption of balanced meal. Kids are not consuming healthy food and not making healthy food choices. Over consumption of junk food is also another problem. Kids are more inclined towards junk food and are substituting healthy food with junk food.

Children have a unique ability to test their parents' limits and push them to bend their rules and boundaries, particularly when it comes to food. Some ways in which kids can make their parents bend include:

**Picky eating:** Children who are picky eaters may refuse to eat certain foods or insist on eating only a limited range of foods. Parents may feel pressure to accommodate these preferences, even if it means deviating from their usual meal planning and preparation strategies.

**Snacking:** Children may ask for snacks or treats outside of regular meal times, and parents may give in to these requests to

avoid a tantrum or argument.

**Mealtime disruptions:** Children may engage in disruptive behaviour during meal times, such as refusing to sit still, throwing food, or talking loudly. Parents may feel pressure to accommodate these behaviours in order to maintain a peaceful mealtime.

**Emotional manipulation:** Children may use emotional manipulation, such as whining or crying, to get their way when it comes to food. Parents may feel guilty or anxious about denying their child's requests, even if they are not in the child's best interest.

When it comes to school lunches, there are many factors that can contribute to children giving their lunch boxes to other mates or bringing back the entire food. Some possible reasons include:

**Lack of involvement:** Children may feel disconnected from the lunch process if they are not involved in selecting or preparing their own food. When children feel like they have no say in what they are eating, they may be more likely to reject it or give it away.

**Social pressure:** School lunchtime can be a social time for children, and they may feel pressure to conform to what their peers are doing. If other children are giving away or throwing away their food, a child may feel compelled to do the same.

**Taste preferences:** The prescribed lunch menu may not align

with children's taste preferences, which can lead to them rejecting or discarding the food.

**Unappetizing presentation:** If the food is not presented in an appealing way, children may be less likely to want to eat it.

**Lack of time and space:** Children may not have enough time or space to eat their lunches comfortably, which can lead to them not finishing their food or giving it away.

### 3. Field Research

Since Gujarat is the state where the project is focussed upon, Gandhinagar region has been chosen for the convenience of field study. An observation exercise was conducted in three selected schools in Gandhinagar, Gujarat, to study the food habits of children. Each day, the lunch boxes of selected students were observed to gather insights into their dietary preferences and patterns. Although the school authorities were initially hesitant, they eventually provided their support for the study. The aim of the study was to observe food habits of children. The exercise was carried out over a period of two weeks, and each day, lunch boxes of randomly selected students were observed.

The process of observing kids' lunch boxes in school involved the following steps:

**Planning:** To determine the purpose and scope of the observation. Identify the specific information to be collected and the methods of data collection.

**Selection of Participants:** Representative sample of students to observe. Targeting groups from age 5 to 9 years.

**Data Collection:** Observed the lunch boxes during the lunch time and documented the contents of each box. Take note of the types of food, portion sizes, and packaging materials.

**Analysis:** Organised the data and looked for patterns and trends. Identify common foods and packaging materials, and look for areas of improvement or concern.

**Reporting:** Noted the findings, used the data to come up with the key problem.

## a. Interviewing school Administrators and students

### Ved International School

We wanted to see what the children of Ved International School chose to have for lunch on the visit. The school administration refused to let us see what was in the pupils' lunch boxes, citing privacy issues.

However, the school administration told us they encourage their children to bring wholesome meals to class. They also mentioned a canteen at the school where pupils can buy food. While we could not see what was in each lunch box, we saw four students sharing the same tiffin box with their friends. Where they ate two palm sized rotis with some curry per person for the entire day's lunch. None of the officials checked their lunch boxes as claimed. Students mentioned that they don't check lunch boxes during interviews.



The Canteen in the school provides all children with fast food, which is contradicting the administrators words of promoting healthy food.

### Vidhya Bharti School (Safal Vidyalaya)

Children's Day observations at Vidhya Bharti School (Safal Vidyalaya)

Findings indicate that the school's canteen sells packaged foods with unsaturated fats and sugar, which, if consumed in excess, can be harmful to children's health. The availability of unhealthy foods in the canteen undercuts the teachers' efforts to emphasise healthy cuisine during the group dining activity.

It is crucial that Vidhya Bharti School (Safal Vidyalaya) assess its entire nutritional policy and make sure that all of the food alternatives given to children are nutritious and balanced. This

can be done by collaborating with the canteen workers to offer healthier food alternatives, teaching kids the value of nutrition, and encouraging healthy eating practises throughout their entire schooling.

Parents frequently have a range of challenges and concerns around their children's eating preferences. Many parents struggle with picky eaters, while others may deal with children with dietary limitations because of food intolerances or allergies. Some parents expressed concern about giving their children anything that the child demands for their everyday body functioning due to their kids preference, budgetary limitations or restricted access to fresh and healthful food options.

In addition to peer pressure, marketing, advertising, and dietary customs or traditions in families or communities, other factors influence children's eating decisions. If kids see their friends consuming high-sugar or high-fat meals or are exposed to advertisements for these foods, they may be more likely to adopt the same lifestyle.

In conclusion, parents are crucial in assisting their kids in developing healthy eating habits. Parents can make informed decisions and proactive steps to ensure their children obtain the proper nutrients and wholesome food selections by being aware of the issues and difficulties surrounding their children's food choices.

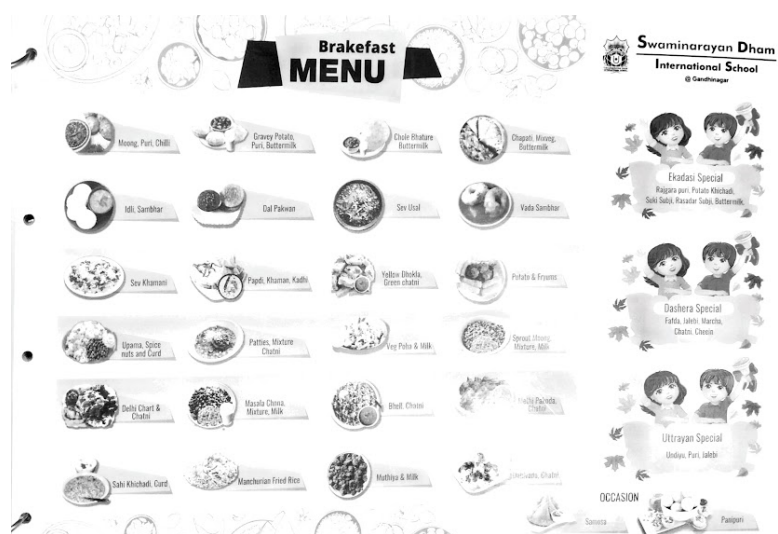
## **Swaminarayan Dham International School**

Swaminarayan Dham International School is a school that is based on the principles of the Swami Narayan faith. According to its beliefs, nutrition directly affects physical, mental, and spiritual well-being. Followers of Swaminarayan rigidly maintain vegetarianism, refrain from eating onions and garlic, and observe fasts to cleanse their bodies and minds. They offer food to God before consuming it and believe in the importance of moderation to avoid overeating. Additionally, they believe in the principle of Annadaan, offering food to the needy, which is considered a noble act bringing blessings and good karma. The school firmly believes that consuming one meal together at school is a healthy practice that can benefit students' mental, physical, and psychological well-being. The school provides meals to abide by the principles and has a planned meal for the entire month.



Although, naturally, parents might like not having to cook meals for their children, it is still crucial for them to have a say in what is served to them, especially if it is a school requirement. The nutritional value of the meals should be

disclosed to parents so they can offer feedback or ideas. It is also important to note how reasonably priced the school's meals are. While this could be advantageous for parents with limited funds, it is crucial to ensure the meal's calibre is maintained in the process.



Even though Swaminarayan Dham International School's founders may have had the best intentions, it is worrying that they did not contact a paediatrician while deciding how to plan the meals and that the snacks offered are rich in calories but lacking in nutrients. Children's meals should be maintained in quality due to cost, and parents should have a role in what is served to their kids. For the sake of the student's general well-being, the school should try to serve both substantial and nutritious meals.

Most of the dishes mentioned in the menu are either made of processed flour or by deep frying them. Those dishes are not providing the children with the required amount of nutrition balance. They are also observed to be served packaged ingredients like ketchup frequently.

## Sri Chaitanya School

Sri Chaitanya School is dedicated to academic success. According to the Junior school coordinator, lack of a balanced diet, poor student performance, lacking proper growth and development (observed in medical examinations), weak social interactions, and eating habits have recently become issues.

Sri Chaitanya School takes pleasure in the diversity of its student body, which includes people from many different social and ethnic backgrounds. The COVID-19 pandemic has adversely affected their pupils' social interactions. Restrictions on gatherings, such as lunch breaks and extracurricular activities, have restricted the opportunities for students to interact and learn from one another. Parents have also requested the school administration not let the children share each other's food and also restricted the school authorities in providing any food during occasions. This lack of socialisation may obstruct holistic development, harming social abilities and general well-being.

### Parent-Teacher Conflict over Eating Habits:

At Sri Chaitanya School, eating habits are a common mode of conversation between parents and staff. Before the pandemic,



the school served meals to guarantee children a healthy diet. Serving meals has been stopped because of concerns around safety and the logistical difficulties brought on by COVID-19. Parents' concerns about their children's dietary requirements and the lack of nutritional balance in their meals have increased due to this adjustment. Parents assume it to be the school's responsibility to care for their child's eating habits.

Some parents have rigid religious or dietary restrictions, which causes conflicts with the school's rules and procedures. For instance, some parents have differing views on the availability of particular foods on the school grounds, which causes conflicts with teachers and administration. This dispute has thus produced a situation where sure students might not get enough nutrition, which could affect their health and academic performance. Sharing toffees on birthdays is also prohibited.

Medical Examination:

Sri Chaitanya School has noticed growth issues among the children during medical examinations. This pattern may be influenced by a few things, such as an unbalanced diet, stress brought on by the pandemic, and diminishing social interaction. A healthy diet is essential for supporting children's cognitive development and general health, and a poor diet may harm academic achievement. Additionally, the disturbance brought on by the pandemic and the decline in social relations may have impacted students' study habits and motivation and hampered their performance.

## **b. Observing cafeteria management**

At the Dhirubhai Ambani Institute of Information and Communication Technology (DAIICT), the cafeteria management committee is crucial to the provision of food services to teachers, employees, and students. However, there are a number of worrying problems with the operation of the committee, including a lack of expertise in nutrition, poor procedures, problems with quality control, and conflicts of interest.

## **c. Group Activity**

On Children's Day, we visited Vidhya Bharti School (Safal Vidyalaya), where we saw a teacher-organised activity, including group eating. The teachers emphasised the value of nourishing food and urged the kids to eat a balanced diet that included fruits, vegetables, grains, and proteins.

The teachers disguised roti sabzi as Frankie and assembled the food in front of the kids, allowing for student participation in their cuisine to make the meal entertaining. The kids were thrilled about it and ate their food with excitement. One mother even mentioned that her son consumed coriander chutney, which he does not typically consume at home.

Additionally, the teachers served grated cabbage as cheese, which the kids enthusiastically ate. We also saw that the students were sharing and promoting one another's fruit portion.



We also saw a barter system where kids exchanged foods they liked for foods they did not during the group eating session. This promoted collaboration and sharing among the youngsters while encouraging them to try new meals.

Additionally, the teachers seized the chance to inform the kids about the value of nutrition and healthy eating practices. They discussed the advantages of a balanced diet and how it can support the pupils' general growth and development.



The pupils were given cake as a bonus for finishing their balanced meal. The group eating exercise was a good method to promote good eating habits and increase student

involvement in a lighthearted and entertaining way. While the Children's Day group eating activity was a great attempt to encourage kids to eat healthily, there may be some issues with the school's general philosophy on nutrition.

#### d. Research Conclusion

**Lack of nutrition knowledge:** The convenor and deputy convenor of the DAIICT Cafeteria Management Committee are only dimly aware of the fundamentals of nutrition, especially carbohydrates. The committee's capacity to decide on the menu and food options with knowledge raises questions in light of this ignorance. They have no say in the menu, their tasks are restricted to cleanliness of the cafeteria and checking expiry date of the products.

**Issues with quality control:** The committee only occasionally inspects the food from the cafeteria, concentrating exclusively on the labels for expiration. After being opened, ingredients are frequently moved to new containers, expiry date cannot be verified. Additionally, the committee is unable to assess the calibre of the ingredients used in the cafeteria's food, thus posing a threat to food safety.

**Conflict of Interest:** Despite having a food allergy, the DAIICT Cafeteria Management Committee deputy convenor continues to oversee the nutrition information.

#### Observations made on food patterns in lunchboxes

Primary school kids are given the list of items that they are supposed to bring to school in their lunchboxes. The schedule is strictly followed for kindergarten kids but not followed for other primary school kids. The list of the items is mentioned below:

Day	Food items
Monday	Poha, Mix Chivda(chivdo)
Tuesday	Sabji and Roti/thepla
Wednesday	Personal Choice (beans/Sprouts/pulses/grains)(kathod)
Thursday	Muthiya, Dhokla
Friday	Fruits

Among all the kids almost half of the kids bring food as mentioned in the schedule, in which majority of them eat the food that they bring and half of them wouldn't finish their boxes. And few of them wouldn't eat the food they bring, but teachers force them to when they bring healthy food. In the other half kids who do not bring food according to the schedule, would bring mostly junk food or the home made food that comforts them which would mostly contain carbs or deep fried items.

Among the kids who bring healthy food according to the schedule to school and eat, there are few kids who eat healthy food at school along with their peers and finish their lunch boxes, but do not prefer eating any healthy food at home. So parents find it comfortable to send these kids to school with a good healthy meal, so they eat and finish.

Among the kids who do not bring food according to the schedule, there are kids who do not eat anything healthy at school but would eat any kind of food that is fed by parents at home. These parents would make the kids watch some programme on TV or let kids play any game on mobile phones, or provide them with some distraction with or without electronic gadgets and feed them food.



Among the kids of class **1 to 12**, class one kids are found to bring food from home, where they bring healthy food along with packaged food. For example, if the kid brought spouts in the box, he/she would have a bar of chocolate or chips packet along with the healthy food. Majority of the kids were observed to be following this pattern in their lunch boxes. And the rest of the kids would either bring completely junk food or completely healthy food in their boxes, and the same kids were found to bring healthy food or junk food on the other day respectively. So the consistent practice of healthy eating is not practised by very very few kids.

Among the kids from class **2 to 12**, most kids are found to be buying food from the canteen with the money that they get from their parents for their food. From the kids who bring food from home,

most of the kids tend to bring food in the same pattern of combining healthy food with packaged food. And also there are kids who bring completely junk food or completely healthy food. And the consistency in healthy eating isn't maintained.



The frequency and consumption of junk food is observed to be more among the students who belong to high school than primary school. It could be said that the competition of junk is increasing by the increase in the age of the kids.

Among the students of high school, From class **8 to 12**, few kids are found to be not consuming anything during their school hours. And if they consume some food they would consume a single fruit which is healthy, but not sufficient by quantity which a kid of that age is supposed to consume. Or they would consume some packaged food.

#### **WHAT DO THEY BUY FROM CANTEEN?**

Majority of the kids buy packaged food from canteen despite the availability of freshly made indian snacks like Dhokla, Kamand, samosa, kachori, etc., which is why the canteen cooks prepare them in a very low quantity and would be sold out almost every day, since there are very few kids who consume that food from the canteen.



### **WHAT DO KIDS HAVE IN THEIR BREAKFAST?**

Younger kids or the kids of primary school are observed to have some food in the breakfast and kids from high school are observed to not consume any breakfast. So the consumption of breakfast is decreasing by the increase in age. From the younger kids who consume breakfast, they consume a proper breakfast which contains milk/tea along with roti/thepla, kamand, dokla, etc., and the kids of middle school from class 5 to 7 are observed to not have breakfast or if they have breakfast they would consume either milk or tea.

### **DO MOTHERS FOLLOW SCHOOL NORMS OF SENDING HEALTHY FOOD?**

Most of the time mothers are concerned about the healthy eating of kids and they try to somehow let the kid eat healthy by sending them

healthy food along with packaged food telling them to finish healthy food first and then eat the packaged food. Where kids eat packaged food first and there is no surety on the kids to be finishing healthy food. They fail to send healthy food by giving up tantrums. Mothers are being helpless in most of the cases since if they are being so strict with the food kids do not tend to eat anything at all. In order to make the kids eat some food, mothers just succumb into providing them with junk food and try to make them eat healthy food.



### **Growth and development issues**

During school visits, many growth-related issues were observed among the children. Teachers mentioned during the interview that these issues have increased significantly after the pandemic. Significant differences existed in the heights and weights of children of the same age and studying in the same class. These differences in growth patterns can be attributed to various factors such as poor nutrition, lack of physical activity, and limited access to healthcare due to the pandemic. Poor nutrition and lack of physical activity can lead to stunted growth and underweight in children. Addressing these issues and taking appropriate measures to ensure children receive

adequate nutrition and physical activity to support their growth and development is essential.

For example these girls in the picture below are of 6th standard and are of 10 years old with a huge difference in their heights.



### **Group Activity Observations**

This group activity was designed to encourage healthy eating habits and to create a sense of community among the children. By bringing raw food from their homes and watching their teachers prepare the dishes, the children learned about different types of foods

and how they can be prepared healthily. The teachers were also able to educate the children about the importance of a balanced diet and the nutrients that can be obtained from different foods.

They were eating together as a group, promoted healthy eating habits, and encouraged social skills and positive behaviour. The children were able to interact with each other, share food, and

communicate in a positive way. As young children, they are naturally curious and interested in each other's meals. This curiosity has led to healthy competition and encouragement to finish their meals.

The children were able to set examples for each other and inspire one another to try new foods and finish their meals. This sense of community and shared experience can help to create positive attitudes towards food and healthy eating habits that can last a lifetime.

## 4. Literature Survey

### a. Examining school curriculum regarding food and nutrition

Existing school curriculum in CBSE, ICSE, NCERT and Gujarat State birds are examined to understand the food and nutrition knowledge shared through academic material at different ages.

Class 1(Age- 5 years):

Various stories which describe the basic concepts of nature, such as seasons, fruit production, flowering and plant growth are presented to pupils in Class One English textbooks. The stories give rise to an appreciation of the natural world and processes which are involved in fruit and vegetable development.

Children are also introduced to different types of fruits and vegetables and their segregation.

Class 2 (Age- 6 years):

In various educational resources, stories about different types of food and recipes are introduced to children. These stories often revolve around characters who demonstrate their relationship with food.

Class 3 (Age- 7 years)

In Class Three Environmental Studies (EVS) textbooks, children are introduced to the topic of food in greater detail. They learn about where food comes from, what a person should eat at different ages, and the other food groups in a very narrow perspective.

Children are also taught about cooking, including different cooking methods and the utensils used for cooking. They learn about which ingredients are cooked, the process and manner in which they are cooked along with the difference between raw and cooked foods.

They learn about the different foods recommended for specific illnesses and the difference between vegetarian and non-vegetarian foods.

#### Class 4 (Age- 8 years)

Class four textbooks introduce children to the importance of eating etiquette and the value of sharing food with others. They learn that eating is not just about consuming food for sustenance but also about sharing a meal with family and friends and building stronger relationships through this community experience. They learn about the different sources of water and how it is treated to make it safe for consumption.

#### Class 5 (Age- 9 years)

Class five EVS textbooks teach children about the digestive system and how food is broken down and utilised by the body. They learn about the different organs involved in the digestive

process, such as the stomach and intestines, and their role in extracting nutrients from food.

Children are also introduced to seeds, fruits, and seasons. They learn about the different parts of a plant, such as the roots, stem, and leaves, and how they contribute to the growth and development of the plant. Additionally, children learn about the different types of fruits and vegetables available in different seasons and how to identify them.

Farming and farmer stories are also essential to the Class Five EVS curriculum. Children learn about the importance of agriculture and farmers' role in growing and harvesting crops. They learn about the challenges that farmers face in brief.

### **b. Understanding cognitive behaviour of kids**

Many studies from old to new were referred to in understanding a child's cognitive behaviour, such as Jean Piaget four stages of development, Erik Erikson 8 stages of development, cognitive and social skills of a toddler and modality specific recall abilities.

#### Stages of development

##### Age 0-2 years:

Children learn through their senses and the manipulation of objects from the world around them. They tend to explore more with their senses trying to understand things around them. With the increase in physical mobility, they start to develop habits.



They learn to develop trust in people and objects around them. Fear can lead them to develop mistrust and doubts.

Maternal care has more influence on the baby, since she reflects her perception of the baby.

Age 2-4 years:

Children start to discover their abilities, strengths and independence and start to do things/jobs by themselves. They start to develop a memory and understand things symbolically. Encouragement leads to strengthening their abilities and discouragement, shame or doubt can lead them to inability and failure. Children at this stage start to develop self control and self esteem.

Requires parents encouragement and a friendly environment to develop self control, self esteem and accept failure.

Age 3-7 years:

Children develop memory and imagination at this stage. They will be able to connect with the idea of future and past. The interaction with the world and physical activity increases a lot. They start to develop independence in making decisions for themselves.

At this stage children develop confidence in their abilities and guilt if they make wrong decisions.

Age 7-11 years:

Children discover logic and develop concrete cognitive operations and inductive reasoning. They develop a sense of competence and compare themselves to others around them.

At this stage children develop individuality and inferiority.

**Modality specific recall abilities<sup>1</sup>:**

Studies are conducted on preschool children of age 3 to 5.5 on modality specific recall abilities, through auditory, visual and audio-visual modalities. Researchers demonstrate that the ability to recall is dependent on the modality of the information presented.

Studies conducted on Indian preschool children in Dakshina Kannada district, shows audio-visual modality has higher recall rate over other modalities. However, there was no statistically significant difference between the scores obtained for auditory-visual and visual modality ( $p = 0.30$ ).

Schneider and Dube 2005 reported that kindergarten children have demonstrated higher recall ability through audio-visual modality. Noles and Gelman 2015, observed visual modality dominance. Sloutsky and Napolitano 2003 observed auditory modality dominance among preschool children.

Auditory system in children matures earlier than the visual. Visual modality is preferred due to familiarity.

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<sup>1</sup>Do preschool children have modality specific recall abilities? - A cross-sectional pilot study. Aparna Prasanna, Malavika Anakkathil Anil, Gagan Bajaj & Jayashree S Bhat <https://www.tandfonline.com/doi/full/10.1080/2331186X.2022.2083519>

## c. Understanding Food and Nutrition Aspects

### Understanding Gujarati Platter

Gujarati cuisine is one of India's oldest and most varied culinary cultures, featuring a distinctive fusion of sweet, savoury, and spicy flavours. However, the texture is frequently regarded as a critical component of Gujarati cuisine. The many meals, snacks, and desserts in Gujarati cuisine are recognized for their creative use of textures.

Lentils, pulses, grains, and vegetables are used in Gujarati cuisine, which gives the food a unique texture. For instance, foods with a spongy and soft feel include khaman dhokla, a famous snack made with a fermented batter of gram flour and sour curd. The savoury cake handvo, prepared with rice, lentils, and veggies, has a crispy exterior and a soft, fluffy interior. Khandvi, a soft layer rolled with sesame spilled which melts in mouth. Fafda with jalebi, crispy fried gram flour with sweet.

Authentic Gujarati food is not sweet, despite what many people think. There may be some precious elements in Gujarati thali, a traditional dinner of various dishes served on a plate, but the sweetness is not the prominent flavour. Instead, spices like ginger, turmeric, coriander, and cumin give the cuisine a savoury and spicy flavour.

Jain cuisine is a fascinating component of Gujarati cuisine. Jains adhere to strict dietary guidelines that forbid eating non-vegetarian foods and root vegetables like potatoes, onions,

and garlic. As a result, Gujarati food has been impacted by Jain cuisine, and many traditional recipes no longer contain these items. In contrast, potatoes are frequently a significant component of Western junk food, notably French fries. However, as potatoes are viewed as a root vegetable and are therefore off-limits to Jains, they would not be lured to partake in this contemporary temptation.

Gujarat is a state in western India known for its rich culture and varied cuisine. The snacking culture in Gujarat is very prominent, and snacking is an integral part of the food culture in the state. Gujarati snacks are famous for their taste and variety, and they are consumed very frequently by people of all ages. The most popular snacks in Gujarat are made from fried gram flour, known locally as "farsan." Farsan is available in many forms, such as dhokla, khandvi, sev, gathiya, and others. These snacks are not only delicious but also have a long shelf life, making them a convenient snack at any time of the day.

Apart from being consumed as standalone snacks, these farsan items are often combined with Gujarati meals. For instance, sev is used as a topping on chaat or mixed with chopped onions and tomatoes to make a quick snack and also to make curry. Khandvi is a popular snack often eaten along with meals, and dhokla is usually served as a breakfast or an evening snack.

The snacking culture in Gujarat has evolved, and people have adapted to different types of snacks from other regions. However, the love for farsan remains unchanged and continues to be a part of the daily food habits of the people in Gujarat.

## **Understanding food advertisements and how kids are targeted.**

Food advertisements are a significant weapon used to market their goods to potential customers. Advertisers frequently utilise enticing and convincing slogans, characters, and graphics to persuade kids to want their products. They might also employ well-known actors and cartoon characters to lure children to their products.

Kids are a popular audience for food marketing since they have a big say in what their parents buy. Advertisers are aware that children are more inclined to beg their parents to buy their items if they are made to want them. To explicitly target children, several businesses produce advertising with vibrant colours, upbeat music, and intriguing imagery.

*Sociologist Vance Packard described children as  
“Surrogate Salesman”*

Children have long been a common target for marketing campaigns. Because of children's considerable effect on their parents' purchasing decisions, advertisers specifically design advertising with children in mind. These advertisements attract children to want their products by using lively colours, upbeat music, and exciting imagery.

Aiming to attract consumers at every stage of their life, publications like Youth Market Alert, Selling to Kids, and Marketing to Kids Report concentrate on *cradle-to-grave* advertising methods. Advertisers are aware that they can keep a

youngster as a customer for life if they can establish a positive brand relationship with them.

Advertisers are aware that parents and grandparents can afford to buy items, and they can persuade them to do so by promising that the products will benefit their children or grandchildren. In some situations, elder siblings may also be the target since they may have purchasing power over younger siblings.

Walt Disney said that brand loyalty begins as early as the age of two and is particularly relevant in food advertising, where advertisers leverage the power of mascots, brand identification, and famous cartoon characters to appeal to young children. These characters and symbols are designed to create a sense of familiarity, trust, and excitement around a particular brand, making it more likely that children will want to consume the products associated with them. Advertisers use mascots, brand identification, and famous cartoon characters to appeal to young children in food advertising.

In recent years, the Internet has become a popular medium for food advertising, with advertisers using platforms like social media and video-sharing sites to reach their target audience. Food companies often partner with popular children's channels like Hangama, Sun Tv, Nickelodeon, Disney Channel, and Cartoon Network to promote their products during popular programming among young viewers in both India and western countries. Chota Bheem is a cartoon that is promoting “besan laddu” which is gram flour laddu for strength. Motu patlu-

eating samosa makes one fat. Parle's brand ambassador has been shaktiman. Rasna's brand ambassador has been chota bheem and many more.

Many of the western food companies came to India trying to change Indian breakfast habits. Kellogg's claimed to change Indian breakfast into cereals but ended up making instant upma. Nestle released nesplus by adding Indian grains in its cereals to match Indian taste buds. On the other hand Indian brands like Tata, Saffola, Patanjali, Quaker are making western fusion breakfast items like masala oats, atta noodle, Ragi bites etc.,

Children spend a significant amount of time watching television, and much of this time is spent watching children's programming. Advertisers take advantage of this by placing ads during popular children's shows, ensuring their products are seen by their target audience.

Toys have long been a popular promotional tool for food companies, particularly those targeting children. For decades, companies like McDonald's have been offering toys with their children's meals, such as the Happy Meal. Other companies like Amul, Sunfeast, Pepsico, Chat Phat, Boomer, Britannia, Cheetos, Kinder Joy, Dairy milk, Gems also offer toys as part of their product packaging. Many of the Indian local brands have also copied this and implemented it in their food products.

Food and beverage companies have also targeted educational institutions to sponsor programmes. Like Nestle sponsorship, Monster, Pepsico ect., sponsor for events and programmes

where they can promote their products. This is particularly effective because school-aged children and adolescents are still establishing their tastes and habits, making them ideal customers for food companies. Eight years old are considered ideal customers, as companies know that they have up to 65 years of purchasing before them.

In recent years, there has been a shift towards healthier options in food marketing, with parent companies promoting fruit juice, teas, and bottled water instead of soda and other sugary drinks. This is often done through sister companies that market healthier products, allowing the parent company to appeal to health-conscious consumers while promoting its brand.

James Mc Neal analysed "children's requesting styles and appeals and these styles may be used in combination of 2 to 3."<sup>2</sup>

- Pleading Nags
- Demonstrative Nags
- Sugar-coated Nags
- Threatening Nags
- Pity Nags

It is observed while interviewing parents that these requesting styles are used by Indian kids with their parents for Junk food.

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<sup>2</sup> Fast Food Nation: The Dark Side of the All-American Meal

## Government food Policies

The government of Gujarat has implemented several policies related to school lunch programs to ensure that children receive proper nutrition during their school day. The Mid-Day Meal Scheme is one such program that aims to provide cooked meals to school children to improve their nutritional status and encourage regular attendance. The program covers children studying in government and government-aided schools, including primary, upper primary, and secondary schools.

The meals provided under this scheme are not meeting the required nutritional guidelines, including a minimum calorie count and protein content.

In addition to the Mid-Day Meal Scheme, the government of Gujarat has also launched the Kuposhan Mukta Gujarat Abhiyan (Malnutrition Free Gujarat Campaign) to address the issue of malnutrition among children in the state. This campaign is designed to improve the nutritional status of children by providing them with nutritious meals, promoting breastfeeding, and improving hygiene practices.

The food provided under this scheme has more carbohydrate content but no protein or vitamin.

The government has also launched initiatives such as the Nutri-garden project, encouraging schools to set up vegetable gardens to provide fresh produce for school meals.

Additionally, the government has implemented a policy of using only fortified oil and wheat flour in the preparation of

meals provided under the Mid-Day Meal Scheme to ensure that children receive adequate amounts of vitamins and minerals.

These initiatives taken by the government are to increase the school programs' budget and promote the specific political party. But in reality, the new initiatives have yet to be practised.

## Watching TV Cooking Programs: Effects on Actual Food Intake Among Children, Frans Folkvord<sup>3</sup>

The study suggests that cooking programs can effectively promote positive changes in children's food-related preferences, attitudes, and behaviours. Through positive peer and teacher modelling, students can be encouraged to try new foods they may have previously disliked or been hesitant to try.

Involving children in cooking can also increase their interest in and acceptance of healthier foods. Research has shown that youth are more likely to eat nutrient-rich foods such as fruits and vegetables if they are involved in preparing the dish. By engaging children in the cooking process and providing them with opportunities to make their own healthy choices, cooking programs can help to establish lifelong healthy eating habits.

Moreover, cooking programs provide children with a hands-on learning experience that helps them develop various skills, including teamwork, problem-solving, and creativity. These skills can benefit all areas of life, not just the kitchen.

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<sup>3</sup><https://pubmed.ncbi.nlm.nih.gov/31706794/#:~:text=Results%3A%20Children%20who%20watched%20the,039>

Cooking programs can be valuable for promoting positive changes in children's food-related preferences, attitudes, and behaviours. By providing children with hands-on learning experiences and opportunities to try new foods, cooking programs can help to establish healthy eating habits that can last a lifetime

### **Nutrition**

Nutrition is a complex field involving various components, including macronutrients, micronutrients, fibre, water, and antioxidants. Macronutrients, such as carbohydrates, proteins, and fats, are essential for our daily needs, while micronutrients, like vitamins and minerals, are needed in smaller quantities. Together, these components work to ensure that our bodies function correctly. Nutrition is not just about providing energy and supporting growth, however. It also considers the accessibility and affordability of food, cultural differences in dietary patterns, and the psychological effects of food on our mood and mental health. Ongoing research suggests that certain nutrients, like vitamins and minerals, may play a role in influencing depression. A person's attitude can affect their food choices, creating a complex interplay between what we eat and our mental and physical health.

### **Food and Mood**

The connection between diet and mental health, particularly depression, has been extensively studied by researchers. Much evidence suggests that our daily food intake can impact our mood. A healthy dietary pattern, such as the

Mediterranean-style diet, has been found to affect mental health positively. This diet includes plenty of vegetables, fruits, nuts, seeds, olive oil, whole grains, legumes, lean meat, fish, and dairy while being low in added sugar, saturated and trans fats and high in fibre and antioxidants. Recent studies have investigated the relationship between unhealthy dietary patterns, particularly ultra-processed foods, and symptoms of depression. These studies have shown a correlation between unhealthy nutritional habits and depression, while healthy dietary ways over time could prevent depression. Moreover, research has demonstrated that a healthy dietary pattern may treat depression. An Australian study found that people with depression who followed a healthy dietary pattern for three months showed a significant reduction in their symptoms of depression compared to those who did not follow the diet. These findings suggest that our diet is crucial to our mental health and well-being.

### **d. Pediatrics Books**

Medical books on paediatrics and research papers about food and nutrition in children are essential resources for understanding the relationship between food and a child's growth and development. These resources provide valuable insights into how food affects physical and mental health and how nutrients work together to support the development of the body. By referring to these materials, medical professionals can make informed recommendations about what children should eat to optimise their health and well-being. Additionally, research in this area can help identify the most effective

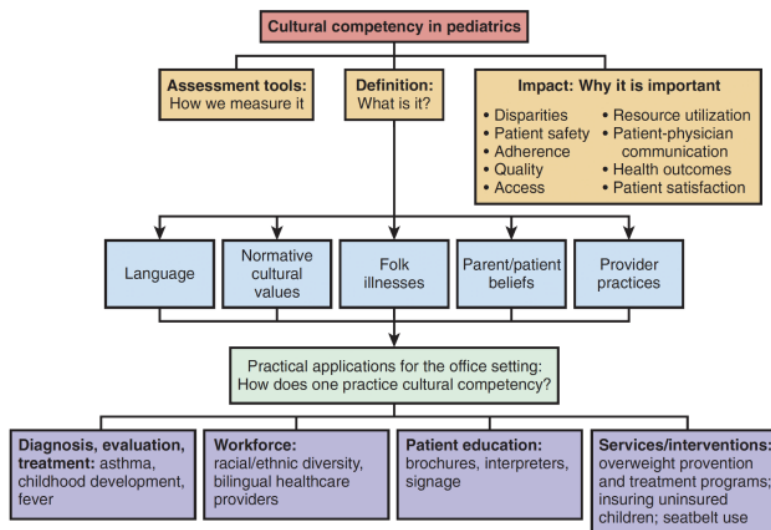
strategies for promoting healthy eating habits in children, which can have lifelong benefits for their health and development. The relation between height and weight is more important according to the growth charts, neither of them should be greater than the other irrespective of their relation.

Age	Height(cm)	Weight(kg)
1	69-79	7-11.5
2	80-92.5	9-14.5
3	85.5-102	11-17.5
4	95-111	12.5-21
5	97.5-118	13-25
6	102-125	13.9-29
7	107-132	15-33
8	112.5-138	16.5-38
9	117.5-144.5	18.2-43
10	123-151	20.8-49
11	129-157	23-56
12	134-162	26-62

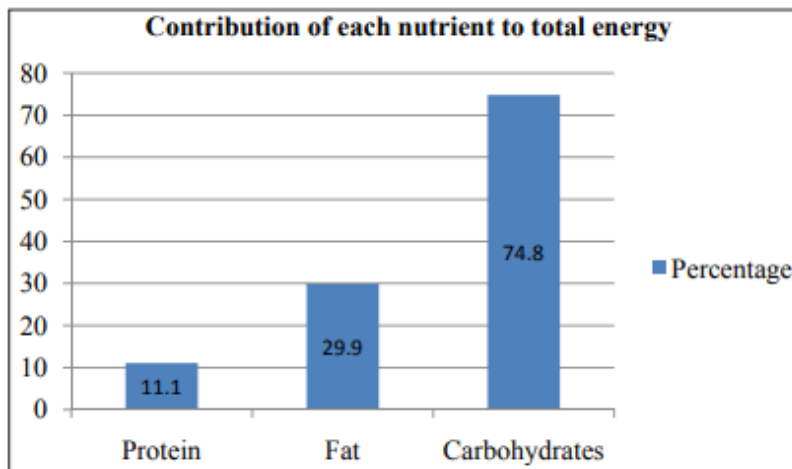
Table 1: Height and weight chart for Girls

Age	Height(cm)	Weight(kg)
1	71-80	7.5-12
2	82-84	9.5-15
3	89-103	11.5-18
4	95.5-111	12.5-21
5	100-118	13.5-24
6	104-126	15-28
7	109-132	16-33.5
8	114-138	18-39
9	119-145	19-45
10	123-151.5	21-51
11	128-157	22-58
12	133-163	25-60

Table 1: Height and weight chart for Boys



Conceptual framework for cultural competency in pediatrics: (1) what is known about the impact of cultural competency on general pediatric care; (2) the domains of cultural competency; and (3) practical applications of cultural competency for general pediatricians



## e. Survey Documents

### FAST FOODS AND SCHOOL

Junk foods are widely available in schools through a variety of outlets. Cafeterias at the schools offer sodas, cold drinks, chips and many other foods of low nutritional value. Sale of junk foods in school cafeterias often competes with more nutritious school lunch schemes. Most of western countries and a few schools in India have banned the sale of junk foods in the school cafeteria. Akshaypatra foundation, a nongovernmental organisation in India has introduced school mid-day meal programs in government aided schools, where healthy Indian foods are offered to children.

In the United Kingdom and many European countries, all commercial activities in primary schools are restricted as per the directive of the Union of European Beverages Association (UNESDA). According to these, secondary school students may be offered a full range of beverages including water, 100% juice, sports drink, and low calorie drinks in different portion sizes in active participation with educators and parents. However, there is a lack of stringent laws and regulations pertaining to fast food sales in Indian schools.

### FACTORS RELATED TO FAST FOOD CONSUMPTION

Fast food chains are gaining popularity with nuclear families as working parents have less time for meal preparation at home. The vast majority of working parents with school going children are laboured with exhausting commutes, other household chores and stress. While their children spend most



of their time away from home by attending tuition classes after their school hours or engaged in recreational activity. For children skipping breakfast at home, fast food comes handy in school. A positive correlation of increased fast food consumption, skipped breakfasts and increased body mass index was found among adolescents. Socioeconomic status is an important factor related to fast food consumption among children. In a study conducted in Hyderabad, children from high socio-economic status preferred fast foods to traditional foods despite their better nutritional knowledge. Proximity of fast food joints to households could also predispose to increased consumption.

Type of Food	Definition	Examples
Fast food	Foods sold in a restaurant or store which are rapidly prepared and quickly served in a packaged form for take away	Burgers, pizzas, fries, hamburgers, patties, nuggets. Indian foods like <i>pakora</i> , <i>samosa</i> , <i>namkeen</i> etc.
Junk food	Energy dense foods with high sugar/ fat/ salt content and low nutrient value in terms of protein, fiber, vitamin and mineral content.	Chips, chocolate, icecream, soft drinks, burgers, pizzas etc.
Instant foods	Foods that undergo special processing that are ready to be served once dissolved or dispersed in a liquid with low cooking time	Noodles, corn flakes, soup powder.
Street foods	Ready to eat foods and beverages prepared and sold by hawkers or vendors in streets or other public places	<i>Chaat</i> , <i>gol guppa</i> , <i>samosa</i> , <i>tikki</i> , noodles, chowmein, burgers etc

Definitions related to Fast Food

Many surveys conducted on school going children, show higher rates of Fast food consumption. The results are mentioned below.

### Eating habits among respondents

Variables	Percentage
<b>Regular Meals</b>	
Yes	50.98
No	49.01
<b>Daily Breakfast</b>	
Yes	50.98
No	49.01
<b>Frequency of daily meals</b>	
Less than three times	58.82
Three or more times	41.17
<b>Frequency of having snacks (per week)</b>	
Less than three times	56.86
Three or more times	43.13
<b>Weekly consumption of vegetables &amp; legumes</b>	
Less than three times	31.37
Three or more times	68.62
<b>Weekly consumption of fruits</b>	
Less than three times	27.45
Three or more times	72.54
<b>Meals with friends &amp; family</b>	
Daily	80.39
Not daily	19.60

### Nutrition Intake

Nutrient	RDA	Mean ± SD	Difference from RDA	Percent consumption of RDA
Energy (kcal)	2350	2527.58 ± 42.71	+177.58	107.5
Protein (g)	70.5	65.3 ± 9.6	-5.2	92.6
Fat (g)	22	78.2 ± 8.1	+56.2	355.45
Carbohydrate (g)	352.5	440.2 ± 95.21	+87.7	0.012
Vitamin A (β-carotene); mg	2400	890 ± 26.9	-1510	37
Iron (mg)	40	14.8 ± 4.0	-25.2	37
Dietary fiber (g)	25	14.3 ± 3.7	-10.7	43

### Pattern of Fast Food consumption among respondents

Pattern of fast food consumption	Percentage
<b>Frequency of consumption per week</b>	
Once	3.92
Twice	54.90
Thrice	15.68
Four times	15.68
Occasionally	9.80
Everyday	—
<b>Favorite type of fast food</b>	
Flour products	76.47
Flour products and carbonated drinks	82.35
Carbonated drinks	94.11
<b>Preference of fast foods to homemade meal</b>	
Yes	25.49
No	74.50

### Perception of how Fast Food consumption can lead to non-communicable diseases (NCDs)

Perception of how fast food consumption can lead to NCDs	Percentage
Fast foods contain cholesterol, sugar, salt, fats etc. and their accumulation in the body	31.37
Fast foods are not cooked under healthy condition and environment	29.41
Increases the risk of developing non-communicable diseases (NCDs)	3.92
Excessive consumption of fast foods	25.49
Intake of chemicals/toxins contained in the preservatives and their accumulation	9.80

### Eating habits among respondents

Question	Options	Frequency(n)
How often do you take snacks apart from regular meals?	Daily	90
	Twice a week	25
Do you get lured by the attractive presentation of fast foods?	Yes	81
	No	34
Does Advertisement mould your mind in such a way that you are forced to consume certain types of fast food?	Yes	97
	No	18
How often do you eat fast food?	Twice a week	104
	Daily	09
Why do you prefer fast food?	Taste	108
	Fast service	7
How much portion size of fast food do you usually eat?	Large	110
	Medium	5
What kind of fast foods do you eat?	Wafers	69
	Samosa	29
	Pizza	17
Why do you eat fast food?	Delicious taste	70
	Diversity of fast food	45
What kind of beverages do you drink with fast food?	Sweetened fruit drinks	78
	Soft drinks	37

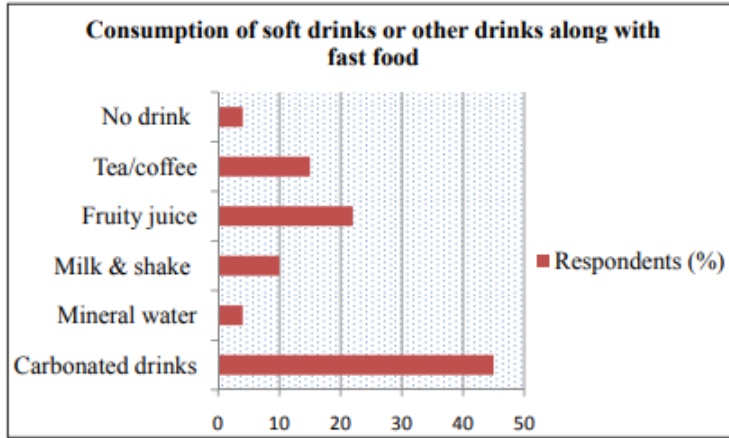


Fig. 1: Consumption of soft drink or other drinks along with fast food

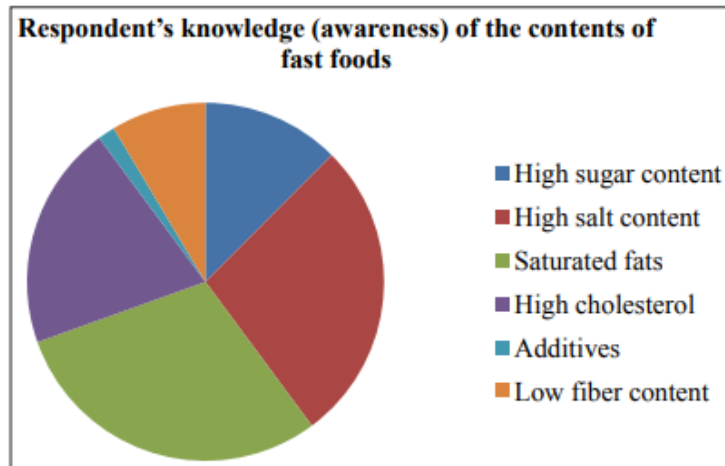


Fig. 2: Respondent's knowledge (awareness) of the contents of fast foods

## 5. Goals

### a. Impact on dissemination of information

1. Increase Parent Awareness:
  - a. Educate parents about the importance of nutrition for their child's growth and development.
  - b. Raise awareness about the long-term health implications of poor nutrition in childhood.
  - c. Provide information on recommended dietary guidelines for different age groups.
2. Nutrient Education:
  - a. Provide clear and accessible information about essential nutrients, their functions, and their dietary sources.
  - b. Aim to educate parents and children on the importance of a balanced diet and help them make informed decisions regarding the kid's nutritional needs and plan meals.
3. Age-Specific Guidance:
  - a. Recommendations and guidelines for parents to meet the specific dietary requirements of their children at early stages of growth and development.
  - b. The considered factors were portion sizes, nutrient density, and meal frequency.
4. Nutritional Tracking:
  - a. Facilitate the tracking and monitoring of nutrient intake for parents of their children.

- b. It should provide tools such as mobile apps or online platforms that allow users to log their meals, assess nutrient intake, and receive personalised feedback or recommendations along with a physical medium of information.
5. Encourage Parent-Child Collaboration:
    - a. Empower parents to involve their children in the meal-planning process.
    - b. Promote open communication and dialogue between parents and children about food choices.
    - c. Encourage parents to consider their child's preferences and involve them in selecting healthy meals.
  6. Customised Meal Planning:
    - a. Provide parents with guidance on age-appropriate meal planning based on recommendations from paediatricians that align with their dietary requirements.
    - b. Educate parents about the specific nutritional needs of their child's age group.
    - c. It should provide options for various dietary preferences, including vegetarian, vegan, or allergen-free diets.
    - d. Offer resources and tools to help parents create balanced and nutritious meals for their children.
  7. Allergen Awareness:
    - a. The design should include comprehensive information about common food allergens, their potential cross-contamination, and alternative ingredient options.
    - b. It should help parents identify allergens in food products and provide guidance on managing allergen-related dietary restrictions.
  8. Collaboration with Pediatricians:
    - a. Facilitate collaboration between parents and paediatricians regarding their child's nutritional needs.
    - b. Encourage parents to consult with paediatricians for personalised dietary recommendations.
    - c. Provide access to resources and information endorsed by paediatricians for child nutrition.
  9. Nutritional Labelling:
    - a. The design should promote clear and accurate nutritional labelling on food packaging.
    - b. It should advocate for standardised formats that are easily understandable for parents, enabling them to make informed decisions when purchasing food items for their children.
  10. Practical Implementation:
    - a. Offer practical tips and strategies for incorporating healthy foods into children's diets.
    - b. Provide recipe ideas and meal planning templates to assist parents in creating balanced meals.
    - c. Offer resources and workshops on food preparation, portion control, and healthy snack alternatives.

11. Interactive Tools:

- a. The design should incorporate interactive tools or apps that engage parents and children in learning about nutrients and dietary requirements.
- b. It could include features such as quizzes, games, or interactive visualisations to enhance understanding and retention of nutritional information.

12. Expert Resources:

- a. The design should provide access to trusted experts, such as nutritionists or paediatricians, who can offer personalised advice and answer specific questions related to children's dietary requirements. It should facilitate connections between parents and professionals through online platforms or teleconsultation services.

13. Nutritional Community:

- a. The design should foster a sense of community among parents and caregivers, allowing them to share experiences, recipes, and tips related to meeting children's dietary needs. It could provide forums, social media groups, or online communities for support and knowledge exchange.

14. Cultural Sensitivity:

- a. The design should consider cultural diversity and respect different dietary traditions and preferences. It should offer resources and

information that reflect a range of cultural backgrounds, ensuring inclusivity and relevance for parents and children from diverse communities.

15. Long-term Behaviour Change:

- a. Focus on creating sustainable, long-term changes in the family's approach to nutrition.
- b. Provide ongoing support and resources to parents to reinforce positive nutrition practices.
- c. Promote the importance of modelling healthy eating behaviours as parents and caregivers.
- d.
- e.

16. Evaluation and Feedback:

- a. Collect feedback from parents to assess the effectiveness of educational materials and resources.
- b. Regularly evaluate the impact of parent education programs on children's nutrition and health outcomes.
- c. Continuously improve and update resources based on parent feedback and emerging research.

## **b. Design goals**

Design Goals for Parent Education on Child Nutrition and Involvement in Meal Planning:

### 1. Break from textbook

To design a learning material that will help students learn more effectively by combining concepts. The material's design should be able to break the monotony of a standard textbook and present the content in a new and unique way.

### 2. Keeping it simple

To combine text and visualisation in a way that is easy to read and understand without creating an information overload. Students should be able to return to their textbook and learn how to read, interpret, and combine concepts from different chapters.

### 3. Making connections

A passive approach to reading the material may not be very beneficial in the long run. To keep students thinking actively, the learning material should pose questions that encourage them to think about the material, go over it again, do their own research, and come up with solutions to the problems.

### 4. Look and Feel

To design a learning aid that simplifies the technical jargon of legal literacy and education in a simple manner. Communicate the concepts in a unique, visually exciting and engaging way. The look and feel of the design should be inviting for the students.

## **6. Analysis of the information**

### **Cognitive Behaviour**

Children begin developing cognitive behaviours, such as habit formation, memory retention, and logical thinking, from a very young age, starting from around three years old. This is a crucial period for a child's development as they also develop their sense of taste during this time. As children tend to be egocentric during the early stages of their lives, it is essential to introduce them to various healthy foods and help them develop a taste for them from an early age. Encouraging healthy eating habits and making the right food choices during this critical period can have long-lasting effects on a child's health and well-being. Therefore, it is crucial for parents and caregivers to provide a healthy and nutritious diet for young children to support their cognitive and physical growth.

### **Physical Development**

The early years of a child's life are crucial for their overall development. This is because a child's brain and body development occurs at its fastest pace during this time. From the age of 3 to 9, children experience significant physical, cognitive, emotional, and social growth. During this time, children learn new skills, develop their personalities, and establish relationships with others. They also develop their language, problem-solving, and reasoning skills.

After the age of 10, puberty growth starts, the body's physical development begins to slow down, and reproductive organ



development starts to develop gradually. This means that the foundation laid during the early years plays a significant role in determining the child's future growth and development. Therefore, providing children with the necessary support and opportunities to develop during this critical period is essential.

### **Academics**

The academic curriculum review indicates that while children are introduced to stories about food, there needs to be more emphasis on the importance of healthy eating concepts. While children are informed about different types of food, they are not given much information about their nutritional value or benefits. The stories use food as a secondary aspect, focusing mainly on the character or the plot. This is a missed opportunity to educate children on the importance of healthy eating habits and the role of food in their overall physical and mental well-being. Therefore, there is a need to provide children with informative and engaging materials that promote healthy eating habits and inform the children about nutrition aspects to encourage them make better choices.

### **Food in Gujarat**

The prominent snacking culture in Gujarat is also influencing the kids' lunch boxes. Children are observed bringing either homemade deep fried snacks or locally made snacks or packaged food.

Even at the restaurants in Gujarat, the unlimited deal is very prominent. This deal is available in many cuisines like

unlimited pizza, unlimited ice cream, unlimited pan, unlimited idli and dosa, unlimited chat etc.

The traditional snacks are also influenced by the western flavours such as chilli cheese khakhra, pizza bhakri.

### **Food Advertising**

In Gujarat, local restaurants are promoting their food to children by providing unlimited kids meals in pizzas, ice creams, chat etc.

Even the multinational food companies like Mc. Donalds and Dominos have child meals and also Jain and swaminarayan customization.

Balaji, the local food brand promotes their products by providing various flavour options and also foods that can be consumed while fasting. This brand focuses on both traditional snacks as well as western snacks. Many of the local food and beverage brands in Gujarat are very established and prominently seen consumed by all age groups.

### **Growth and Development**

By Analysing the observations made during the school visitings and survey documents it is observed that the growth of the children in Gujarat is unfitting as per the medical growth standards. In many of the cases child stunting, child wasting and obesity 1st stage has been more prominently observed.

## **7. Target audience**

Teenagers and school-going children were initially identified as the target audience. Most of the problems related to food were discovered with teenagers in many aspects, like obesity, hormonal imbalances, mental health issues, and many more. Many of the teenagers were unaware of the basic concepts of nutrition. Despite having food allergies, few of them do not know the basic concepts of food and nutrition. Many of them seemed to be ignorant. They also believe in common stigmas related to food, such as meat being the only good source of protein; a balanced diet is expensive and is only for celebrities.

More observations were made on the knowledge of nutrition among them. School curriculums were referred to understand the essential knowledge establishment. It is observed that the basic concepts of nutrition were introduced to the children through the academic curriculum, but nothing in-depth was taught through textbooks.

After researching children's cognitive and physical development, it is understood that the most crucial stage of development happens at the early stages of life. Habits and tastes are developed in the early stages of life.

The lack of a healthy environment related to food in Gujarati homes is also observed. There is a lack of information about the options available, which is why it is crucial to educate parents.

After the research, it is decided to target children in the early stages of development, 3-9 years old. So the children develop habits with informative choices and let them develop their memory and taste with the properly informed choice that they could carry forward the rest of their lives.

During that age, children are more dependent on parents for knowledge, physical help, logical reasoning, and decision-making, which is why it is more important to educate parents of children that are of age 3-9 years old.

## **8. Choice of Medium**

### **a. Exploration of medium**

Before exploring mediums, the existing mediums were referred to to understand what is already present in the market. There are many books for children about healthy eating. But the language used in the books is not child friendly. Most of them are addressed to senior school students and young adults. They are filled with textual information but not visual information.

There are also books that address parents on how to make children eat healthy food. They are mainly focused on parenting aspects rather than what can be fed to children.

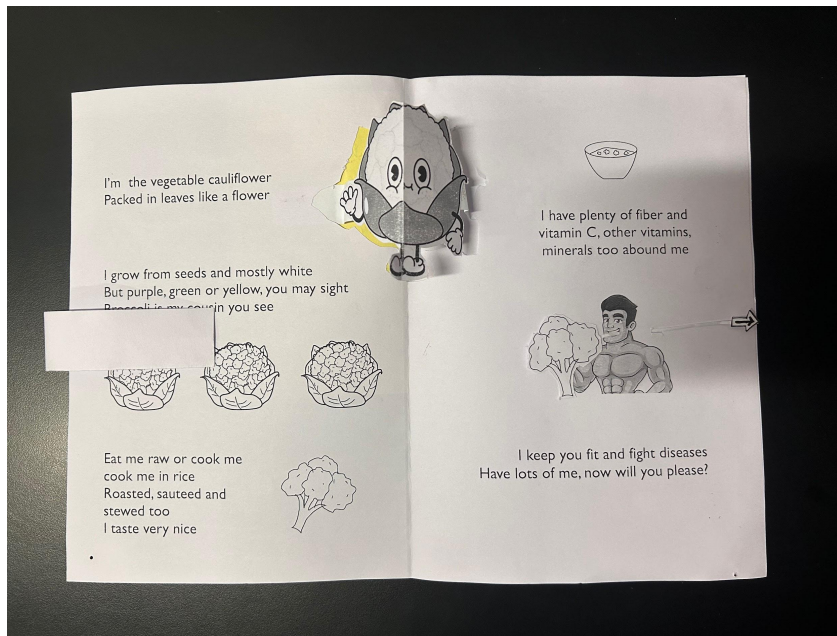
There are many articles present on the internet for parents about how to make children eat healthy food, focussing on the parenting aspect. Many pieces are available by a specific food brand talking about what to feed children, but most of them contain their brand promotion.

There are youtube videos that talk about food and how to cook food to make it interesting for kids. But they promote using Ketchup, mayonnaise, and other processed ingredients which are not healthy. The awareness about healthy alternatives to processed food needs to be more.

There is a lack of adequate resources available that provide detailed information on how food contributes to the growth and development of a child's body. The currently available resources are geared toward the general public and provide

only basic information. However, more detailed and crucial information about the relationship between food and growth and development in a child's body can be found in medical books, specifically paediatric books studied by medical students. Child participation in all these resources that are available is zero.

Therefore, it is essential to create resources that are accessible to a broader audience, such as parents and caregivers and also children, which provide accurate and detailed information about the nutritional value of different foods and how they impact a child's overall health and well-being.



Pop-up book exploration

As part of the medium exploration

Space design, exhibition

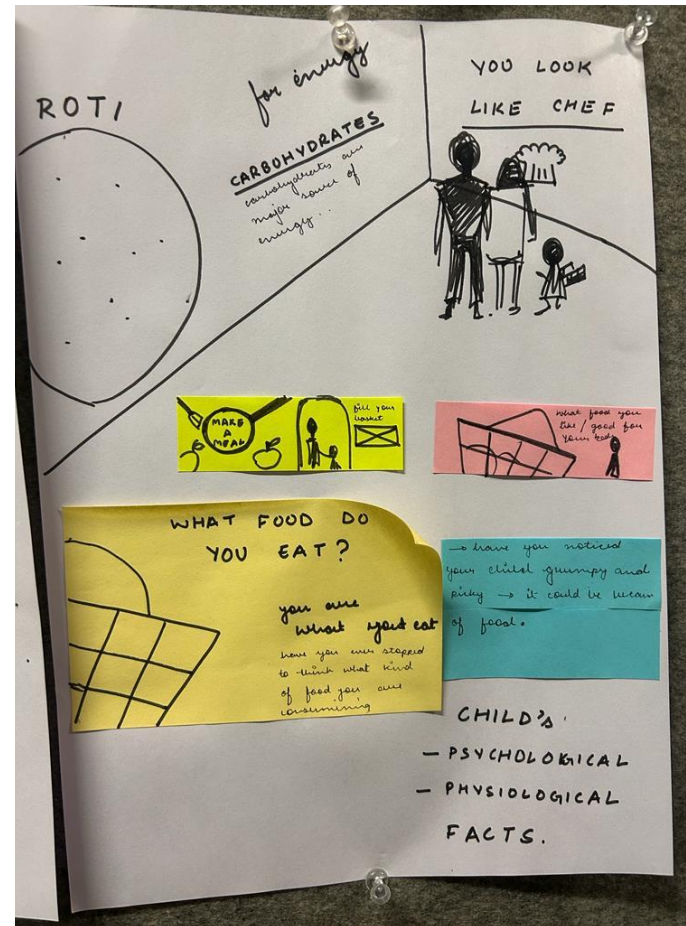
The collapsible space design aims to create an engaging and interactive environment for meal planning sessions in schools, where parents and children can work together to create nutritious meals. The design aims to strengthen the parent-child bond while considering the child's physiological and psychological needs, including their choosy nature for specific food items.

Design Overview:

1. Purpose: The collapsible space serves as an interactive zone where parents and children can actively participate in meal planning and learn about the importance of nutrition.
2. Layout: The space is divided into different sections, starting with the carbohydrate section, followed by fats, protein, and fibre. Each section contains a variety of food items representing the respective category.
3. Basket System: At the space's entrance, participants are given a basket to fill with food items. The basket represents a complete and balanced meal that participants will assemble using their preferred food choices.
4. Importance of Each Category:
  - a. Carbohydrates: Major source of energy for growing bodies and brain development.

- b. Fats: Essential for nutrient absorption, providing energy, and supporting brain development.
  - c. Protein: Vital for growth, muscle development, and repair.
  - d. Fibre: Promotes healthy digestion and prevents constipation.
5. Interactive Elements:
- a. Information Boards: Display each food category's nutritional facts, benefits, and importance.
  - b. Recipe Ideas: Provide creative meal suggestions using the available ingredients.
  - c. Child-Friendly Graphics: Incorporate visually appealing and child-friendly designs to enhance engagement.
6. Parent-Child Bonding:
- a. Collaborative Activities: Encourage parents and children to work together, discuss their food preferences, and make joint decisions.
  - b. Communication Stations: Include designated areas for parents and children to share their thoughts, ideas, and feelings during the session.
7. Addressing Choosy Nature:
- a. Variety of Options: Offer various food items within each category to accommodate different preferences and dietary needs.
  - b. Education on Nutrition: Educate parents and children about the importance of balanced nutrition and the benefits of trying new foods.

8. Flexibility and Portability:
- a. Collapsible Design: Ensure the space is easily collapsible and portable, allowing for convenient setup and storage.
  - b. Modular Components: Utilize modular components to adapt the space according to the available area and number of participants.



## **b. Cards, magnets and interface**

Cards are one of the classic study tools that promote studying through active recall, one of the practices through which our brains learn most effectively. In cognitive psychology, there's a concept called the Picture Superiority Effect, which describes how people tend to remember imagery a lot better than words.

A card is a mnemonic device that can be applied to a large number of concepts. Given the larger goal of making people aware and interested in some basic knowledge about nutrition information, a card provided a break from the textbook, youtube videos, and web article format, forcing the user to think about the information presented at hand actively. It opens the scope for discussion and can make a learning experience interactive. It serves the purpose of delivering bite-sized information in a concise manner. A combination of imagery and text can promote better learning and recall. Introducing a concept through a card forces a learner to analyse and think about the situation before coming up with an answer. A child requires parental support to use them, which opens a scope of discussion. Once the child gets handy with the cards and the information, it can be used as a self-study tool.

Magnets are provided along with the cards so that the child can place them on the refrigerator. This provides a prominent and accessible space for the child to interact with the cards, even during their daily routine, such as when they are eating breakfast or getting a drink. This makes the learning process more interactive and convenient for the child. Additionally,

placing the cards on the refrigerator serves as a visual reminder for the child to refer to the importance.

## 9. Content Strategy

Content strategy was developed in stages as mentioned below:

- segregating the ingredients by nutrients and by type of ingredient
- Nutrition facts
- Growth and development information
- Tips
- Dishes

Segregating the ingredients by nutrients and by type of ingredient:

Many iterations were made to segregate the ingredients by nutrients and type of ingredient. Both of the segregation were made differently according to their consumption requirements. There had been a lot of change between these to find the most suitable segregation. After all the iterations, the segregation was made both by nutrition and type of ingredient, as mentioned below:

- Cereals= Carbohydrates
- Vegetables= Vitamins and Minerals
- Grains and Nuts= Proteins and Fats
- Fruits= Antioxidants.

Nutrition facts:

It is found that there are a lot of stigmas around specific food ingredients; for example, milk is the only source of calcium, paneer, tofu, and dal are the only vegetarian source of protein,



meat is the best source of protein, peanuts are full of fats, Rice and wheat are full of carbohydrates, Spinach is the best green vegetable, potatoes, and eggplant contain no nutrients, etc. But in reality, finger millet and sesame are better sources of calcium than milk; Peanuts are excellent sources of protein as well as good fats; Rice and wheat also contain a small amount of nutrients, including Iron and fibre, Moringa and amaranth leaves are other excellent sources of nutrients, Potatoes are a great source of potassium and eggplants are rich in antioxidants.

To eliminate all such stigmas around food ingredients, it was essential that the nutrition facts of the ingredients were given to the users. In that way, the users can also know about other ingredients that are available and their nutritional values.

Growth and development information:

Many people were under the misconception that protein and calcium are the only nutrients that support growth and development. It is also because of the wrong marketing techniques used by food companies.

But in reality, it is essential for a human to consume all kinds of nutrients in a balanced manner according to age for overall well-being.

To eliminate such stigmas and to educate users, it was crucial to provide information about all the nutrients and how they support the body's development.

Tips:

Food Design concepts have been involved in tips for parents to prepare meals that cater to their children's taste preferences. The tips are designed to help parents create appetising food combinations that their children will enjoy. By following these tips, parents can ensure that their children are receiving a balanced and nutritious diet. The tips have been written in a manner that is easy to understand and implement, making it accessible to all parents. Overall, the information provided through Food Design concepts could help parents create a healthy and enjoyable meal environment for their children.

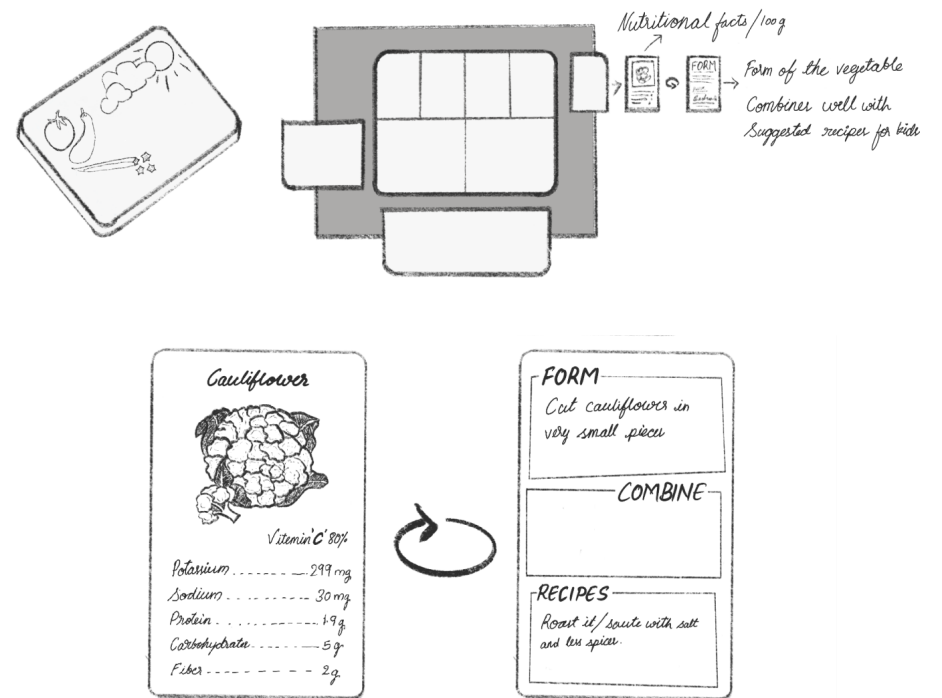
Dishes:

Providing dish information on the recipe cards can be very useful for parents as it will help them identify the dishes their child might like to eat. It can also help create a diverse meal plan by providing different dishes. The cards mainly include Indian recipes suitable for the Indian palate. However, they have also included a few international dishes like noodles and pasta to provide various options. Moreover, the dishes are designed to contain ingredients from different food categories, which can help provide a balanced diet to the children.



## 10. Visual Design Process

### a. Exploration of different formats

The project built up over a period of time and went through numerous iterations at each and every step. The idea of Lunch Box and information about nutrition facts, form, combination, seasonality, and recipes had to be included in the product. So, we started with collecting the required information on all the ingredients and placing them to see how they played out. These initial iterations are shown in the image below.

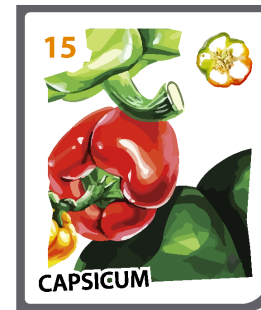


In an attempt to make the card in different sizes according to the proportion of the quantity of consumption, the cards below indicate the type of card, the name of the ingredient, and their nutritional value. The exploration of using graphics instead of numbers has also been made, as shown in the images below.

 <p><b>Carrot</b></p> <p>Daily value</p> <p>Fiber 2.8g ..... 11%</p> <p>Vitamin C ..... 9%</p>	<p><b>Cabbage</b></p> <p>Daily value</p> <p>Vitamin C ..... 60%</p> <p>Vitamin B6 ..... 5%</p> <p>Fiber ..... 10%</p>
 <p><b>Wheat</b></p> <p>Daily value</p> <p>Carbohydrate ..... 25%</p> <p>Protein ..... 20%</p> <p>Fiber ..... 10%</p>	<p><b>Green Peas</b></p> <p>Daily value</p> <p>Protein ..... 10%</p> <p>Vitamin C ..... 66%</p> <p>Fiber ..... 22%</p>
<p><b>Options</b></p> <p>Roti</p> <p>Wheat bread/ Brown bread</p> <p>Wheat pasta</p>	

After deciding on the grid sizes, many more explorations were made based on the content, sizing, representation, and illustration style shown in the images below.

 <p><b>Snake Gourd</b></p> <p>10% of Daily value of fiber</p> <p>2% of Daily value of Protein</p> <p>High moisture content</p>	<p><b>Tomato</b></p> <p>32% of Daily value of Vitamin C</p> <p>25% of Daily value of Vitamin A</p> <p>Absorbance not to pair with carbohydrate</p>
<p><b>Wheat</b></p> <p>80% of Daily value of Carbohydrates</p> <p>15% of Daily value of Protein</p> <p>30% of Daily value of fiber</p>	<p><b>Toor Dal</b></p> <p>44% of Daily value of Protein</p> <p>100% of Daily value of fiber</p>



Later the variations in sizing, colouring and styles have also been explored.

**Spinach**

Nutritional Value

100% Vitamin C, 99% Vitamin A, 84% Vitamin K, 82% Folate, 82% Manganese, 81% Iron

Forms of cereals that can be combined with

Roti, Rice, Bread, Noodles, Pasta

Vegetable combination

Spinach And Tomatoes should not be combined because both these foods are loaded with oxalate that forms calcium oxalate stones in the kidneys. So, avoid eating these together.

Tips

Do not fry spinach. Prewash it or cut it into small pieces according to the dish to make it appealing for kids.

**Pomegranate**

Nutritional Value

17% Vitamin C, 16% Vitamin K, 16% Folate, 10% Folate, 8% Copper

Forms of cereals that can be combined with

Roti, Rice, Bread

Vegetable combination

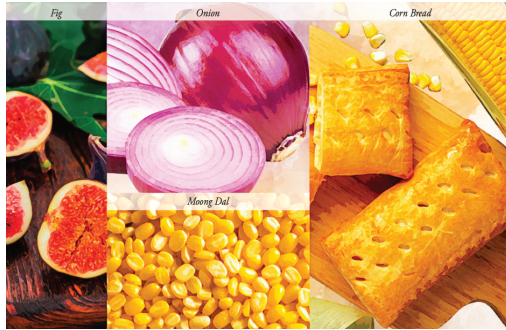
Pomegranate can be combined in fruit and vegetable salads, and the any other fruit can be consumed directly.

Tips

Do not make pomegranate juice. Once it loses it's fiber quality. Slice it in salads and Eat it raw.

<p><b>Wheat</b></p> <p>Forms</p> <p>Roti, Bread, Noodles, Pasta</p> <p>Combine with</p> <p>Wheat having high fiber can be combined with any vegetable, but or Dal.</p> <p>How to make</p> <p>Try using different forms of it. Use whole wheat, wheat noodles, etc., to make healthy diet.</p> <p>Wheat Bhajia with curries</p> <p>Dal Paratha with curries</p>	<p><b>Tomato</b></p> <p>Combination</p> <p>The combination of cucumber and tomato is advised to be avoided. The reason is that they both have a complete set of amino acids. Hence, they must not be consumed together as the combination can lead to acid formation or acidosis.</p>
	<p><b>Tuar Dal</b></p> <p>Combination</p> <p>Tuar Dal can be combined with any vegetable or greens.</p>

### Front side of the cards



### Back side of the card

#### Wheat Flour

**Combination**  
Wheat flour can be combined with any vegetable, fruit or Dairy.

**Recipes**  
Roti, Paratha, Aloo paratha, Golo paratha, onion paratha, panner paratha, mochi paratha, mathi paratha, matar paratha, Dai paratha, sattu paratha, palak paratha.



**Recipes**  
Roti with bhindi sabji  
Methi aloo paratha with panner and kotha

80% Carbohydrates, 16% Protein, 30% Fiber

#### Snake Gourd

**Combination**  
Snake gourd can be combined with any vegetable. It best tastes when eaten in curry form. Boiled and mashed snake gourd can be mixed in soups and other curries as the boiled snake gourd does not have much flavor to it and combines well with other vegetables.

**Recipes**  
Curry, Sambhar, Soup

10% Fiber, 2% Protein, High in Water content



#### Whole wheat Vermicelli

Whole wheat is highly beneficial for improving body metabolism, controls obesity due to it's High protein and carbohydrate content.

**Recipes**  
• Vermicelli Ujma  
• Vermicelli Idli  
• Vermicelli Noda  
• Vermicelli Kheer  
• Vermicelli Sooji Farsala  
• Vermicelli Halwa  
• Sakti Sevyan

• Panner/Vermicelli and Mushroom vegetable broth  
• Lebanese rice with Vermicelli  
• Tomato Vermicelli soup  
• Salsita/Vermicelli pappam  
• Vermicelli Pulao  
• See Brany



Vermicelli adli



Panner/Vermicelli and Mushroom Vegetable broth

50% Carbohydrates, 5% Protein


#### Apple Gourd

Apple gourd is high in carotenoid antioxidants, which helps in maintaining healthy vision of colours and eye health.

**Dishes**  
• Curry  
• Soup  
• Sambhar

• Sacks  
• Sandwich  
• Ujma

• Paratha



20% Vitamin-C, 11% Iron, High in water content

#### Soya tofu

Tofu is high in protein and contains all the essential amino acids, source of protective antioxidants and a wide variety of vitamins and minerals, which helps in overall body development.

**Dishes**  
• Curry  
• Stalaw  
• Chai

• Stata  
• Noodles  
• Rice

• Grilled  
• Paratha  
• Salads



43% Protein, 26% Iron, 10% Potassium

#### Corn Bread

Corn Bread is rich in carbohydrates and a good source of folate, zinc, B vitamins, phosphorus and vitamin C, that are essential nutrients for a child's overall growth.

Serving Size	100 g
Carbohydrates	84 g
Protein	7 g
Fat	0.4 g
Vitamins A, C	
Calcium	2 mg
Iron	26 mg
Fiber	2.7 mg
Phosphorus	150 mg
Potassium	115 mg
Zinc	1 mg
Sodium	430 mg

370 kcal  
*Available daily in all summer*

**Recipes**

- Cornbread stuffing
- Pancakes
- Croissants
- Chili pie
- Muffins
- Cornbread and black bean salad
- Cornbread with honey butter
- Cornbread and sausage casserole
- Cornbread grilled cheese
- Fruit cobbler

#### Onion

Onions help enhance the immune system and reduce symptoms of asthma, they enhance a young body's abilities to absorb iron, and help cure a stuffy nose in children.

Serving Size	100 g
Carbohydrates	9.3 g
Protein	1.1 g
Fat	0.1 g
Vitamins	86, C
Fiber	1.7 mg
Folate	19 mg
Iron	0.2 mg
Potassium	146 mg
Calcium	23 mg

40 kcal  
*Available daily in all summer*

#### Fig

Fresh figs are a great source of fibre for a healthy gut. They contain Vitamins B5 and B6 for cell energy, and copper to assist the child's body in absorbing iron, a critical nutrient to power growing children.

Serving Size	100g
Carbohydrates	19.18 g
Protein	0.75 g
Fat	0.3 g
Vitamin C	
Potassium	232 mg
Calcium	35 mg
Iron	0.37 mg
Magnesium	17 mg

74 kcal  
*Available daily in summer and winter*

#### Yellow Lentil

Yellow lentil helps the growth of hair, skin and nails. It has resistant starch which helps in digestion. Traditional medicine suggests that mung dal increases blood circulation because of its rich iron content.

Serving Size	100 g
Carbohydrates	60.68 g
Protein	23.49 g
Fat	1.51 g
Calcium	43 mg
Selenium	8.21g

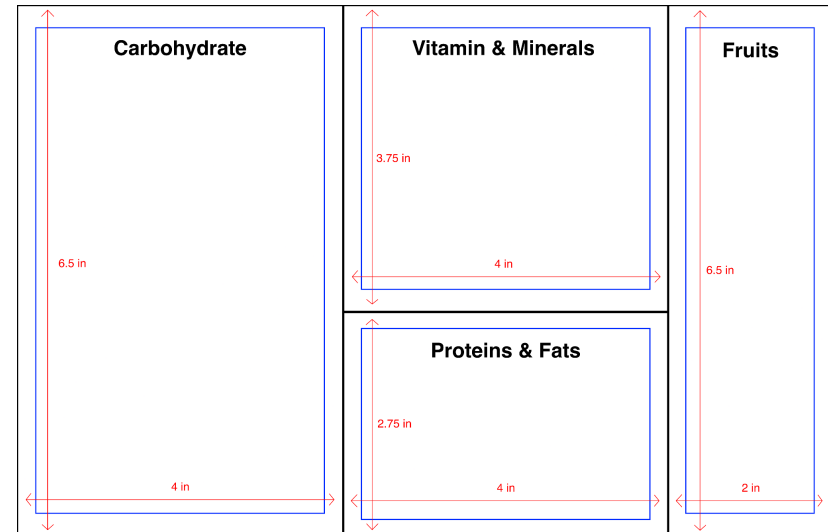
341 kcal  
*Available daily in all summer*

## b. Sizing and Grids

The sizing of the Cards is made in such a way that they cover many of the concerns related to food and sorting.

The sizes of the cards are decided in such a way that they replicate the portion size of each nutrient and ingredient. The cards are compiled in such a way that they complete all the nutrient requirements per a day. The areas of the cards in the whole set indicate the percentage of ingredient quantity. It also becomes easy to sort cards according to their type with their sizes.

The grid with sizing and margin is shown below



Category	Dimensions (height x width)	Area	Percentage
Carbohydrates	6.5in x 4in	26 sqin	40%
Vitamin & Mineral	3.75in x 4in	15 sqin	23%
Protein & Fat	2.75in x 4in	11 sqin	17%
Fruit	6.5in x 2in	13 sqin	20%
Total	6.5in x 10in	65 sqin	100%

### c. Typography

While choosing the fonts, the emphasis was to keep it simple, readable while adding an element of interest as well. The fonts had to be used in combination, with sufficient readability and their combination with the images. Many font styles and combinations were explored that suit the product and have better readability.

Explorations of combination:

Calibri and **Raleway**

Proxima Nova and **Helvetica Neue**

Cambria Math and **Roboto**

Gill Sans, **Helvetica** and Garamond

Gill Sans:

Gill Sans font is a humanist sans-serif typeface with a simple, elegant structure and high readability. It has clean lines and open shapes, making it easy to read even in small sizes.

Helvetica:

Helvetica is a sans-serif font with a simple and clean design. It's even spacing, and balanced proportions make it highly readable, especially in small sizes.

Garamond:

Garamond is a serif font with a classic, elegant style with curved letterforms. Its high readability makes it a popular choice for books and other print materials.

Gill Sans a e i o u c g h q h g o 00 Body

**Helvetica a e i o u c g h q h g o 00 Heading**

Garamond a e i o u c g h q h g o 00 Text

## Heading (18 pt)

Subheading (12 pt)

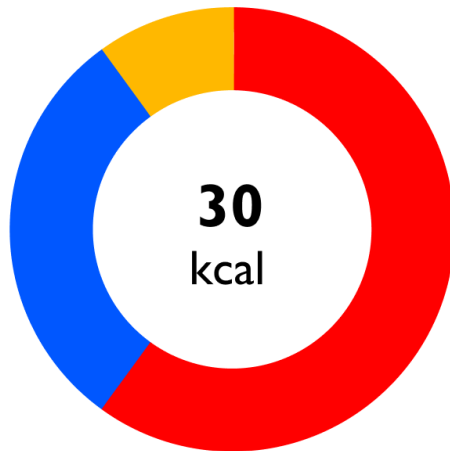
Body Text (10 pt)

Text (10 pt)

#### d. Infographic

The only infographic used in the Card is the pie chart.

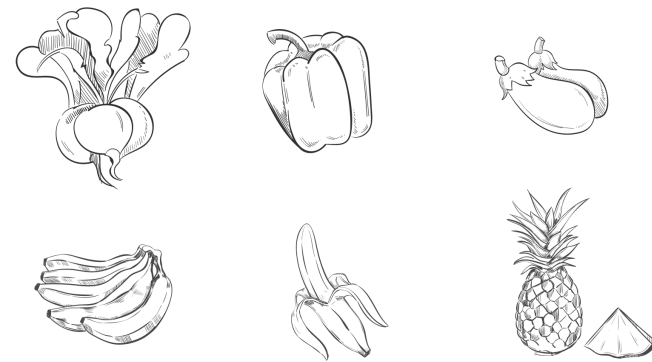
It is used to convert the quantities of Carbohydrates, Proteins and Fats. All these three together give the calorie count of an ingredient. Therefore it is decided to place the calorie count in the middle. The amount of calories is mentioned in the middle of the pie chart as shown below.



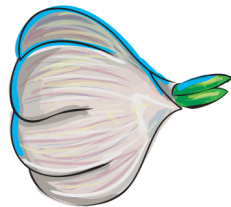
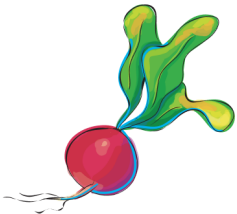
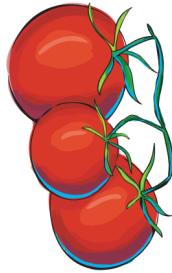
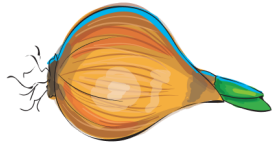
#### e. Illustration

Explored different illustration styles for food ingredients for informative meal cards. Understand the target audience by researching and understanding the age group and preferences of the target audience, both kids and parents. Consider the child's cognitive development, interests, and visual preferences.

Began by sketching rough ideas for the illustrations. Experiment with different compositions, poses, and expressions for the food ingredients. Focus on creating visually appealing, relatable characters that resonate with the target audience.

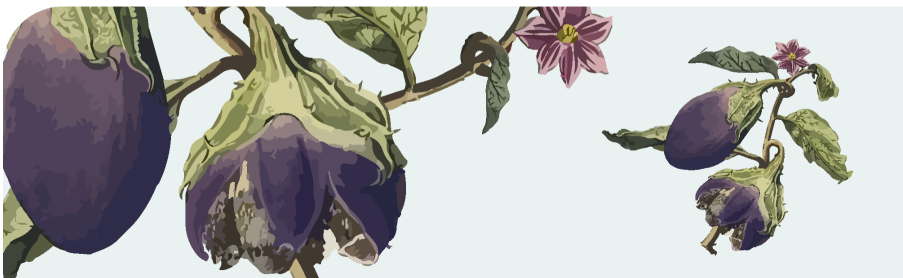
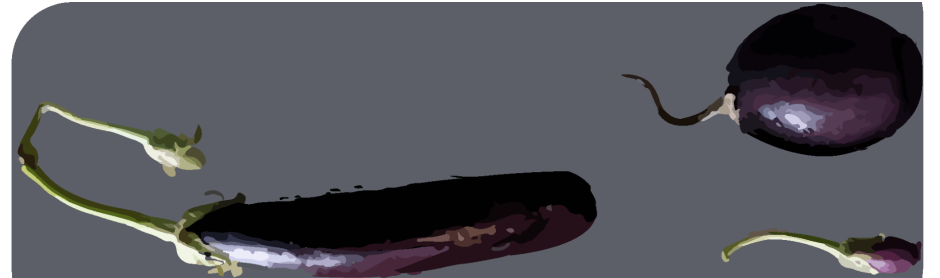


Collected relevant information about the food ingredients for illustration. Explore various illustration styles that would appeal to kids and parents. Some styles explored included cartoonish, hand-drawn, watercolour, digital illustrations, or a combination of styles. Consider using bright and vibrant colours to attract children's attention.











While visually appealing, the above illustration styles were appealing yet could have effectively captured the essence of natural food ingredients. The styles could have resonated better with the authenticity and characteristics of the ingredients, particularly in the case of pulses and nuts. To address this, it was crucial to explore styles that focus on realism or semi-realism, such as botanical illustrations.

The process involved selecting actual photographs of raw ingredients and applying Photoshop filters to enhance their textural quality. High-quality images that capture the natural state of the ingredients were chosen. Photoshop filters like "Sharpen," "High Pass," or "Texture" are selectively applied to bring out details and emphasise textures. Colour balance, brightness, and contrast adjustments were made to ensure accurate representation.

This combination of reference photographs and Photoshop editing creates illustrations that authentically showcase the ingredients' textures while maintaining their organic feel. The result is visually appealing illustrations for the informative cards that accurately depict the raw ingredients' appearance and texture.



## f. Colours

### i. Front side of the cards

A thorough exploration of a carefully chosen colour palette becomes essential when creating illustrations that closely reflect the natural form of food ingredients. This palette considers the colours of stems, leaves, seeds, and other pertinent details associated with the ingredients. Using colour theory, the illustrations can effectively convey the desired message and visual appeal.

Colour theory suggests that warm colours, such as reds, oranges, and yellows, can evoke a sense of warmth and energy, making them visually stimulating and appetising. These colours are suitable for illustrating ripe fruits, vibrant vegetables, and other appealing ingredients. Conversely, cool colours like blues and greens can create a sense of freshness, tranquillity, and balance, which work well for illustrating leafy greens, herbs, and vital elements.

When it comes to shading, textures, and gradients, the techniques can be experimented with to add depth and visual interest to the illustrations. Subtle shading and gradients can create a three-dimensional effect, while textures can enhance the tactile qualities of the ingredients, making them more engaging and realistic.

The colours and lighting that make food more visually pleasing for kids and parents can vary depending on personal preferences. However, bright and vibrant colours generally

appeal to children, while parents may appreciate a more balanced and natural colour palette. Natural or warm lighting can enhance the textures and colours of the food, making it more visually enticing for both kids and parents.

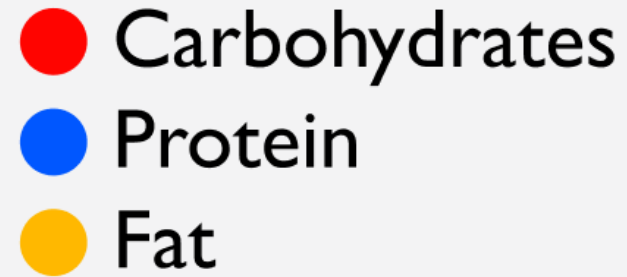
Overall, by applying colour theory principles and considering the target audience's preferences, it was possible to create visually engaging illustrations that closely resonate with the natural form of the food ingredients, catering to both kids' and parents' visual interests.

The decided illustration style uses photographic images as a base, which are then enhanced with filters. This approach helps maintain a realistic representation of the ingredients while adding a touch of creativity.





respective nutrients. This makes it easier for viewers to understand the nutrient content of a food item at a glance.



## ii. Back side of the cards

The back side of the card is utilised to provide information about the ingredients, creating an informative and visually appealing experience. The colour for the back side of the card is chosen to be white and the only colours used are to depict carbohydrate, protein and fat.

Chemical tests determine the presence of different nutrients in food ingredients. These tests use indicators that produce a colour change based on the type of nutrient present. For example, carbohydrates make a red colour, proteins have a blue colour, and fats produce a yellow colour. To maintain consistency in the visual representation of these nutrients, the similar shades of red, blue, and yellow to represent the

## 11. Product Identity

### a. Naming

When it comes to naming the informative cards, it is essential to choose a catchy, memorable name that reflects the purpose of the cards. Ideas are supposed to be picked from a name that meets that criteria. "Amma ka Dabba " was chosen as the name for the product. It conveys the purpose of the cards, which is to encourage exploration and learning. The name is engaging and fun, invoking a sense of adventure and curiosity. It is age-appropriate, easy to pronounce, and aligns with playful and interactive branding. "Amma ka Dabba" also stands out as a unique and distinct name in the market, providing a memorable identity.

"Amma Ka Dabba" is a name that can be interpreted as "Mother's Lunchbox" in Hindi. It combines the term "Amma," which means "mother" in many Indian languages, with "ka," meaning "of" or "belonging to," and "dabba," which refers to a lunchbox commonly used in Indian households.

The name "Amma Ka Dabba" evokes a sense of home-cooked meals, care, and the nurturing aspect of a mother's love. It conveys the idea of providing delicious and wholesome food in a traditional and comforting manner. The name is associated with packed lunches reminiscent of a mother's touch and the warmth of homemade meals.

After user testing, the brand name "Amma Ka Dabba" received positive feedback and resonated with the participants emotionally. The name evokes a sense of familiarity, comfort, and nostalgia among the users. It captures the essence of a mother's love and cares through the reference to "Amma," a term that carries emotional weight in many cultures. Including "Dabba," a term commonly associated with home-cooked meals, further adds to the emotional connection.

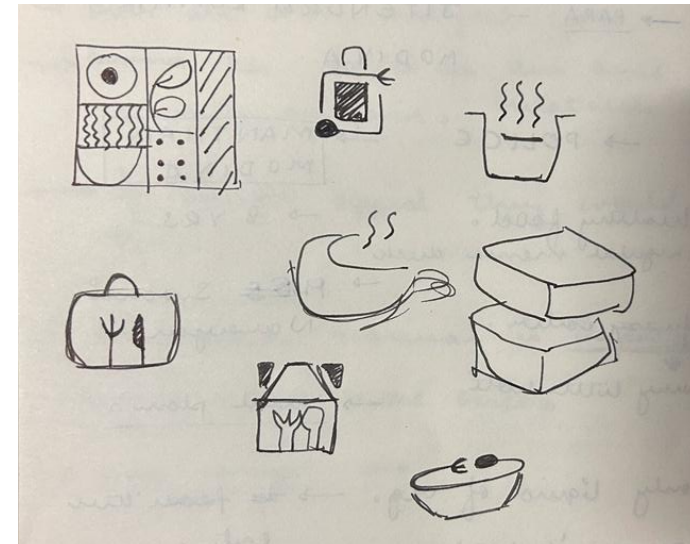
When hearing the name, participants expressed feelings of warmth, security, and a sense of homecoming. It reminded them of the delicious and wholesome meals their mothers or grandmothers prepared. The name sparked joyful memories and nostalgia for traditional, homemade food.

The emotional resonance of "Amma Ka Dabba" is likely due to its ability to tap into the strong emotional bond between individuals and their maternal figures and the cultural significance of home-cooked meals. This positive emotional response can contribute to a strong brand connection, fostering trust and loyalty among the target audience.

Overall, the emotional response to the brand name "Amma Ka Dabba" reflects its effectiveness in conveying the intended emotions and creating a meaningful connection with the users.

## b. Logo

During the logo unit exploration for "Amma Ka Dabba," several possibilities were explored to create a visual representation that captures the essence of the product. One option was to incorporate an iconic symbol, such as a simplified lunchbox or cooking utensil illustration, to instantly convey the concept of home-cooked meals and the care of a mother's kitchen. This can evoke feelings of warmth, comfort, and nostalgia.



Iconic representation was rejected as the users found it difficult to relate to an icon logo; it indicates the need to reconsider its



design. The logo could not establish a clear connection with the product creating confusion and detachment.

Typography integration was another avenue to explore. The logo unit aimed to convey joy and informality by selecting fonts that balance playfulness and readability. Additionally, incorporating elements, adding visual interest and enhancing the overall look and feel of the logo.

Another approach is to depict a mother-child connection, visually depicting a mother and child sharing a meal or engaging in a nurturing gesture. This imagery evokes love, bonding, and the unique connection between a mother and her child, reinforcing the brand's focus on providing wholesome meals and nurturing care.

Bubblegum Sans is a playful typeface that belongs to the sans-serif category. It is known for its rounded letterforms, soft edges, and cheerful appearance. Bubblegum Sans gives a sense of fun, energy, and charm, making it appropriate for the target audience. The characters of Bubblegum Sans often have exaggerated proportions, with slightly exaggerated curves and a friendly, approachable style. The font conveys a vibrant and playful atmosphere.

Final logo unit:

1. It was Legibility, readability, appropriateness for the context, and aesthetic appeal.

2. The letterforms were easy to understand, there was appropriate breathing space between letters, and there was consistency in the font.
3. It effectively communicates the desired tone and enhances the overall look and feel of the product.
4. It had versatility, uniqueness, and adherence to typographic principles.

# Amma Ka Dabba

## c. Packaging

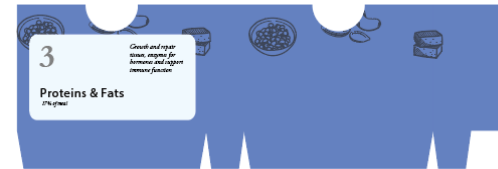
The packaging of “Amma Ka Dabba” is built with the strong 1mm thickness papers which ensures the product durability and sustainability.

As there are four sets of Cards and Magnets included in the product, the box is made in two parts. The top tray of the box contains space for cards and the bottom tray contains spaces for magnets.

The outer covering of the box is a sleeve, where both the g into. So as to ensure that the Four sets of cards are kept in place, four pouches are made according to the card size, with

the information regarding the set of cards printed on it. The numbers are also used on the pouches to ensure the order of meal planning.

The diecuts and the final print designs are shown below.



## 12. User testing and Feedback

### a. Dipika Ankit Padhiyar (mother)

- i. Sanvi - 9 years : no allergies
- ii. Sarvi - 6 years : no allergies
- iii. Rajvir - 4 years : allergic to processed sugar

Kids's school - St. Xavier's

Kids don't have many nags.



The family consists of the entire spectrum of target audience taken for the project, which helped understand the product works from 3 years to 9 years of age.

They live in a joint family; kids observe elders and are comfortable consuming any food served to them. However, they often demand changes in the menu. Mother often needs clarification about what other recipes to cook. She believes in consuming home-cooked nutritious meals. One of her cousin's children has blood cancer, they say it is because of consuming cheese so she limits the use of cheese for her family and kids.

Dipika, a mother, never consulted a paediatrician specifically for her kids' food choices. However, she prioritises providing healthy meals for her children. When Dipika is not at home, the kids' "kaki," prepares their meals. Ordering food is limited. To add variety and interest to her cooking, Dipika explores cooking channels and recipe books. She seeks inspiration from these sources to create elaborate and nutritious meals for her children. She doesn't allow her kids to consume food from the school canteen.

Pros as per her

1. She did not know the few ingredients, yet she was thrilled, especially with Bajra noodles.
2. She could identify ingredients without reading the text, yet she believed the text added to her ease.
3. She connected with the product and appreciated the overall look and feel with back information.
4. She connected with the title "amma ka dabba". she felt her essence was there in the product.
5. She was willing to buy the product and use it once a week.

Cons as per her

1. She was not able to understand how to use the cards; instruction manuals are required.
2. She wanted access to recipes as well.
3. Place where she can get cornbread.
4. Fridge magnets were a bit of a concern for her, kids can easily damage the magnets.



**b. Jitendra kumar Modiya (father)**

Manthan - 8 years

Kids's school - Swaminarayan Dham School

Feeding the kid is a challenge.

The family is Nuclear family, and my father cooks the food. Father has to be strict about feeding the child. He wants to consume only packaged and fast food from joints. The kid willingly eats noodles and similar if cooked at home.

Pros as per him

1. He was amused by the variety of pasta and noodle options. Jowar pasta connected a bit to his roots.
2. Ingredients were easily readable.
3. He connected with the product and appreciated the overall look and feel with back information.
4. He liked the title "amma ka dabba", although he is the one cooking the food.
5. He was willing to buy the product and use it once a week.

Cons as per her

1. He was not able to understand how to use the cards; instruction manuals are required.
2. He wanted tips for concealing ingredients so that his kid gets the nutrition required.
3. Place where she can get cornbread.
4. Fridge magnet would work for his kids as he is enthusiastic to know the meal he would be served next



**c. Maitri (mother)**

i. Neha - 7 years

Prefer consuming only food ordered from outside only. Neha, as a child, exhibits a trait of preferring food ordered from outside and displaying tantrums when offered homemade meals. This trait showcases her selective taste preferences, convenience-seeking behaviour, and susceptibility to peer influence.

Her mother appreciated the look and feel and the information provided on the cards. She wants to use the cards to make changes to her daughter's dietary preferences.

## 13. Product specifications

### a. About

**Product Description:** Amma Ka Dabba is an informative meal-planning tool designed to promote nutrition and healthy eating habits in children. It is a card-based product that helps users to plan their daily meals and snacks according to their nutritional needs.

Features:

- The product is specifically made for children of age 3-9 years old, and portion sizes address the same age group.
- The product provides information about the nutritional analysis, including calories, macronutrients, and micronutrients.
- Amma Ka Dabba provides recipe suggestions for the available ingredients.
- Information about how the benefits of the ingredients in the growth and development of a child is given.

Technical Specifications:

- It is a card-based product.
- Data: Amma Ka Dabba uses comprehensive food data, including nutritional information and growth and development information for various ingredients and recipes.
- Nutrient Analysis: The nutritional values are acquired from professional nutritionist websites.

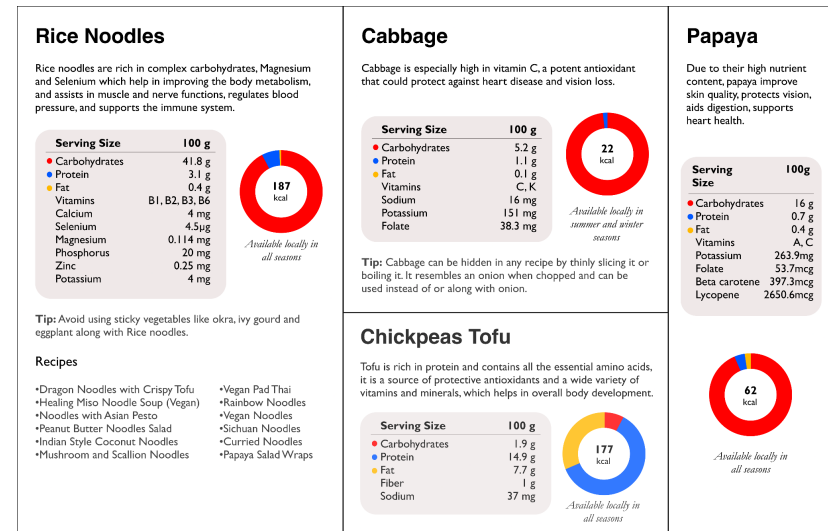
## b. Set Description

User Guide:

The cards of different categories are placed in the pouches, which have the guiding information about the set. These sets are given numbers on each of them, guiding the user to make a sequential meal planning. They are also given the description about the primary characteristics and uses of that nutrient.



The information on the cards is mentioned consistently on all the cards. Since carbohydrates are the major parts of the meal, they also decide the basic structure of the meal. Which is why the recipe information is mentioned on the carbohydrate card.



## c. Printing and cutting

After designing the product, Few printing options were explored to give a physical shape to the designs. The papers used for the prototype were 300 gsm with a semi-gloss finish. Different printers also gave different quality prints. There were some issues with print quality of the colours. The better judgement of what the prototype could look like to what it should look like was learnt through this exercise. However, actual products in manufacturing might be different. All the cards were manually cut after the printing. For packaging, 300 gsm paper is used for pouches and 1 mm thickness sheet is used for the outer box. Both of them were cut by hand and folded into a shape.

For the magnets 2mm thickness MDF material is used. They were cut through a laser cutting machine. After the magnets were cut the images were printed on the sticker sheet and then stuck on the cut pieces and then magnet pieces were stuck using fevibond glue. All the work except laser cutting is done manually in making magnets.





## 14. Scope

As the future Scope of the project, Cloud Module diagram is made to understand how the rest of user problems can be addressed. During the user interview the other problem that we noticed that the parents have is time management. Working parents do not have time some days to make desirable food for their children. Which is the other reason why parents give junk food to their children in lunch boxes like chips which is very easy for them to manage.

As a Solution for such problems, Cloud food delivery strategy is developed. This strategy is made by considering many factors, such as User concerns, choices, Flexibility, Cooking, Managing, hygiene, costing, etc. are included in the diagram as shown below.

This as a strategy can be implemented as a Startup idea, with proper food licensing. The product “Amma ka Dabba” can be related to the same start up and so that parents can still use “Amma Ka Dabba” even on the days when they don’t have time. They can decide what their child would be eating and order it and get it delivered to schools.

The Diagram of the strategy is given below

# Cloud Module

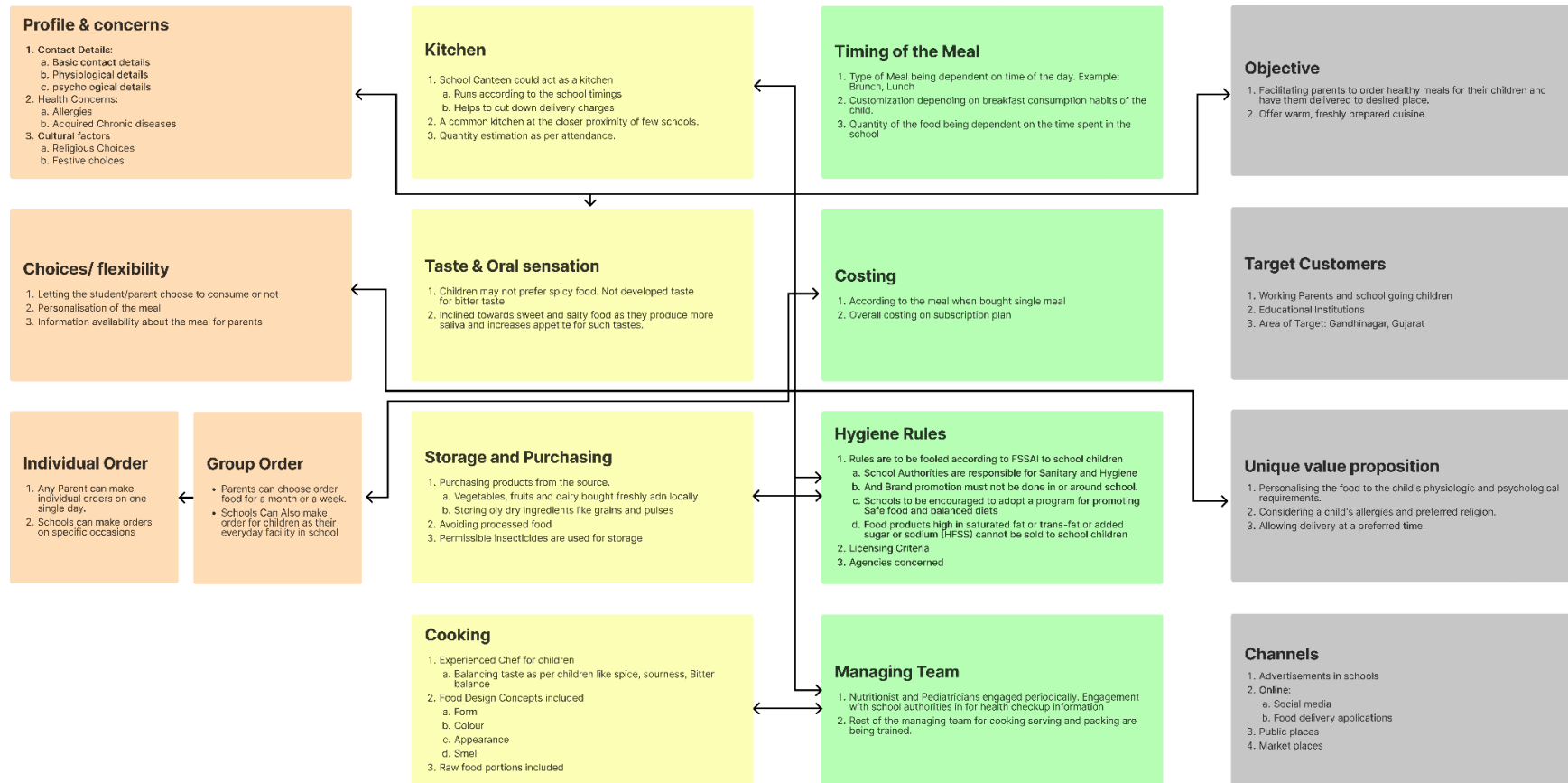
## Food Delivery

### User

### Food

### Managing

### Marketing



## 15. Conclusion

In conclusion, "Amma Ka Dabba," the meal planner, is a valuable tool that can significantly enhance one's dietary habits, time management, and overall well-being. By utilising "Amma Ka Dabba," individuals can effectively plan and organise their meals, ensuring they meet their nutritional needs and dietary goals.

"Amma Ka Dabba" promotes healthier eating habits and embraces cultural diversity by allowing individuals to incorporate their cultural preferences and traditional recipes into their meal plans. It encourages the exploration of different cuisines, flavours, and cooking techniques, making mealtime a celebration of cultural diversity and heritage.

Furthermore, "Amma Ka Dabba" promotes the inclusion of locally available ingredients, supporting local farmers and businesses. By incorporating fresh, seasonal produce and locally sourced ingredients, individuals can enjoy meals that are not only nutritious but also environmentally sustainable.

Another advantage is engaging children in the "Amma Ka Dabba" meal planning process. It encourages their involvement in food choices, educates them about nutrition, and develops their culinary skills. By allowing kids to participate in meal

planning with "Amma Ka Dabba," families can promote healthier eating habits early and foster a positive relationship with food.

"Amma Ka Dabba" can also accommodate dietary preferences and restrictions, ensuring inclusivity for individuals with specific needs. Whether someone follows a vegetarian, vegan, gluten-free, or allergen-free diet, "Amma Ka Dabba" can help create customised meal plans that cater to their requirements, making adhering to their dietary choices easier.

In conclusion, "Amma Ka Dabba," the meal planner, is a practical and effective tool for improving nutrition and time management. It also promotes cultural diversity, including locally available ingredients and children's engagement in the meal-planning process. By utilising "Amma Ka Dabba," individuals can lead healthier, more inclusive, and balanced lives while enjoying the satisfaction and joy of well-planned meals.

Misconceptions create a stigma around balanced meals being a luxury for the wealthy, but it is a myth. Eating well on a budget is possible. Staples like grains, legumes, fruits, and vegetables form the foundation of a healthy meal. Seasonal produce and frozen/canned options are cost-effective. Pasta, bread, and noodles are not inherently unhealthy; whole-grain varieties offer nutrients. Vegetarian meals are not limited or repetitive; the possibilities are vast.

Individuals can create diverse, balanced recipes with grains, legumes, vegetables, fruits, herbs, and spices by broadening

vegetarian meal planning. To break the stigma, we must educate on affordable, accessible meals. Emphasise budget-friendly ingredients and creative vegetarian cooking for healthier choices without compromising taste or finances. Debunk misconceptions for inclusivity. A balanced meal is not exclusive; "unhealthy" foods can be nutritious in moderation. Understanding food diversity promotes healthier habits and inclusive nutrition.

Food design would be crucial in promoting healthy eating habits and enjoyable meal experiences for kids. It involves creating visually appealing, colourful, and fun meals encouraging children to eat nutritious foods. Incorporating creative presentations, such as arranging fruits and vegetables into playful shapes or using colourful ingredients, can attract and engage kids in their meals.

Additionally, involving children in the food design process, such as allowing them to choose ingredients or participate in simple food preparations, fosters a sense of ownership and excitement about eating healthily. Ultimately, Amma ka dabba combines nutrition and creativity to make mealtimes enjoyable and encourage a lifelong love for nutritious foods.

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