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ESCUELA DE POSGRADO



**Consulting Report - Municipality of Surco: Social Project Proposal to Reduce
Childhood Obesity of Primary Education Students in a Public School in the District of
Santiago de Surco**

**TESIS PARA OBTENER EL GRADO DE MAESTRA EN ADMINISTRACIÓN DE
NEGOCIOS OTORGADO POR LA PONTIFICIA UNIVERSIDAD CATÓLICA DEL
PERÚ**

PRESENTADA POR

Romina Flores Merino, DNI: 71860694

ASESOR

Sandro Alberto Sánchez Paredes, DNI: 09542193

ORCID 0000-0002-6155-8556

JURADO

Rafael Alejandro Fernández Concha

Luz Andrea Lazarte Aguirre

Sandro Alberto Sánchez Paredes

Surco, septiembre 2024

Declaración Jurada

Yo, **Sandro Alberto Sánchez Paredes**, docente del Departamento Académico de Posgrado en Negocios de la Pontificia Universidad Católica del Perú, asesor(a) de la tesis/el trabajo de investigación titulado **Consulting Report – Municipality of Surco: Social Project Proposal to Reduce Childhood Obesity of Primary Education Students in a Public School in the District of Santiago de Surco**


de la autora

- **Romina Flores Merino, DNI: 71860694**

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Apellidos y nombres del asesor: Sánchez Paredes, Sandro Alberto	
DNI: 09542193	Firma 
ORCID: 0000-0002-6155-8556	

Dedication

To my father, who was always my greatest motivator when it came to studying. To my mother, who is my motivation and who has always given me her unconditional love and support. To my siblings, who have always believed in me and have supported me in pursuing my goals.



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Executive Summary

This thesis addresses the increasing prevalence of childhood obesity and overweight in the district of Santiago de Surco, Lima, Peru, with a focus on primary school children aged 6 to 11 years. By using the Design Thinking Methodology, the study analyzes the key factors contributing to this public health issue, such as limited access to nutritious food and insufficient physical activity. The thesis presents a proposed solution through a social program that provide free after-school physical activities, in partnership with the Municipality of Santiago de Surco and Smart Fit. Its goal is to increase the number of hours of exercise that children participate in on a weekly basis, thereby addressing on of the main contributors of the childhood obesity. The study also evaluates the scalability of the program, considering its potential expansion to other age groups, schools, and districts. Additionally, the program emphasizes the importance of the community collaboration, including the parents and local businesses, to ensure the active participation and the initiative's financial sustainability. By promoting an active lifestyle and health habits of children, the thesis contributes to combat childhood obesity in Peru, aligning with the country's Sustainable Development Goals 2 and 3.

Key Words: Childhood obesity, Community Solutions, Physical activity, Public Health, Sustainable Development Goals

Abstract

Esta tesis aborda la creciente prevalencia de la obesidad y el sobrepeso infantil en el distrito de Santiago de Surco, Lima, Perú, centrándose en los niños de primaria de entre 6 y 11 años. Mediante el uso de la Metodología de Design Thinking, el estudio analiza los factores clave que contribuyen a este problema de salud pública, como el acceso limitado a alimentos nutritivos y la insuficiente actividad física. La tesis presenta una propuesta de solución a través de un programa social que ofrece actividades físicas extraescolares gratuitas, en colaboración con la Municipalidad de Santiago de Surco y Smart Fit. Su objetivo es aumentar el número de horas de ejercicio que los niños realizan semanalmente, abordando así uno de los principales factores que contribuyen a la obesidad infantil. El estudio también evalúa la escalabilidad del programa, considerando su potencial expansión a otros grupos de edad, escuelas y distritos. Además, el programa destaca la importancia de la colaboración de la comunidad, incluidos los padres y las empresas locales, para garantizar la participación activa y la sostenibilidad financiera de la iniciativa. Al promover un estilo de vida activo y hábitos saludables en los niños, la tesis contribuye a combatir la obesidad infantil en Perú, alineándose con los Objetivos de Desarrollo Sostenible 2 y 3 del país.

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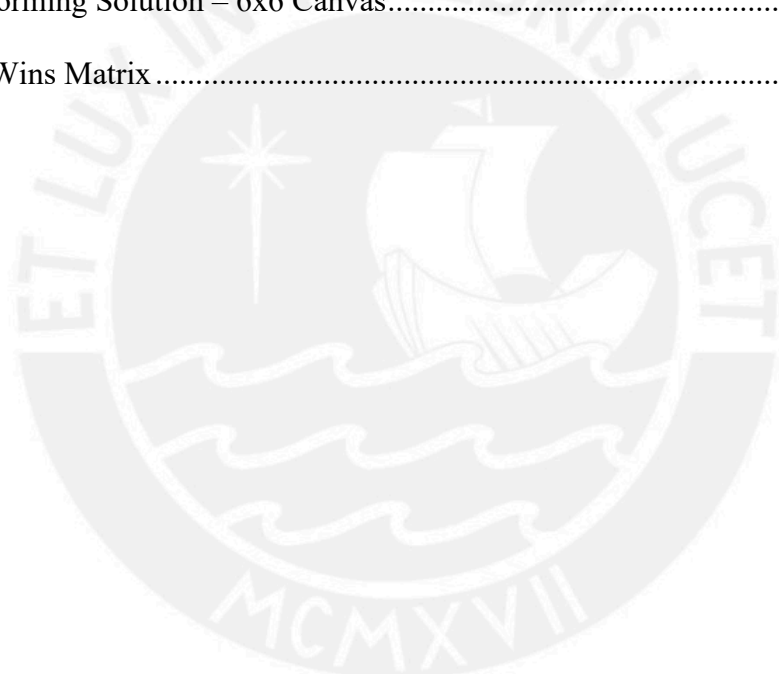
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Chapter I: The Context

1.1 Childhood Obesity and Overweight

According to the World Health Organization (2024), overweight is considered a condition of excessive fat deposits, while obesity is regarded as a chronic complex disease that due to the overweight can impair health. To measure both, the Body Mass Index (BMI) is used, which considers the weight of the persona as well as its height, as shown in the formula below.

$$BMI = \frac{\text{weight (kg)}}{\text{height (m}^2\text{)}}$$

Also, it is important to consider the age and sex of the person at the moment of evaluation. In the case of children and teenagers, the Center for Disease Control and Prevention (CDC) considers as a healthy weight when the range is between the 5th percentile to less than the 85th percentile (see *Table 1*). To measure children between 2 and 20 years old, CDC uses the BMI charts for girls and boys (see **Appendix A** and **Appendix B**).

Table 1

CDC BMI Category and Range

BMI Category	BMI Range
Underweight	Less than the 5 th percentile
Healthy Weight	5 th percentile to less than the 85 th percentile
Overweight	85 th percentile to less than the 95 th percentile
Obesity	95 th percentile or greater
Severe Obesity	120% of the 95 th percentile of greater OR a BMI of 35 kg/m ² or greater

Note. Adapter from BMI Percentile Calculator for Child and Teen of Center for Disease Control and Prevention (2023)

According to UNICEF (2023), the situation of overweight in Latin America and the Caribbean is alarming. Considering the data available up to the year 2016, it is observed that 30.6% of children and adolescents between the ages of 5 and 19 are overweight. This index is above the global indicator, which is 18.2% for the same age range. As can be seen in **Appendix C** only in South America, 10 out of 13 countries have a prevalence of overweight (including obesity) greater than 25%.

The increase in childhood obesity in Peru has become a critical public health concern. According to the Ministry of Health [Minsa] (2023), seven out of ten Peruvians suffer from excess weight, which is also affecting children. There are 38.4% of Peruvian children and adolescents aged 6 to 13 with overweight (UNICEF et al., 2023) making Peru the country with the highest rate in the whole South American region (El Peruano, 2022). By 2030, it is expected that 1 million Peruvian children aged 5 to 19 will be living with obesity (Lobstein & Brinsden, 2019).

1.2 Primary Education of Public Schools in Santiago de Surco

The education in Peru is structured in three levels: pre-primary, primary, and secondary education (Ministry of Education [MINEDU], 2017). Primary Education level in Peru is divided into six grades and belongs to the regular basic education (Congress of the Republic of Peru, 2003). It is oriented to students aged between 6 to 11 years old (National Institution of Statistic and Informatic [INEI], 2014). Also, the education provided by public schools is free as it is mandated by Peruvian law, although there are associated costs related to the materials and uniforms (MINEDU, 2017).

The curriculum for primary schools in Peru includes core subjects such as mathematics, language, arts, social studies, science, religion, and physical education (PE) (MINEDU, 2017). The total hours of primary education per week is 30 hours as it was mentioned by the Minister

of Education Rosendo Serna (Gestión, 2022). Also, as it is detailed in **Appendix D**, 3 hours per week are assigned to PE in all the primary grades.

The education in the district of Santiago de Surco is regulated by the UGEL 07. According to the information from this national entity (2016), there are 12 schools with primary education levels as it is detailed in **Appendix E**.



Chapter II: Defining the problem

2.1 The User

The methodology applied to define the relevant social problem of child obesity is Design Thinking. The design thinking process is considered a suitable approach due to its human-centered and creative focus as well as the matching of integrating society's needs with innovation. It provides the researcher with a different perspective on the problem through the four core activities inspiration, ideation, development and implementation (Han, 2022). To start the process of developing an innovation sweet spot including desirability, viability, feasibility and integrity, the process started with the empathizing and defining stages (Board of Innovation, n.d.).

In this stage, extensive research of secondary sources has been conducted to obtain a clearer view of the big picture and observations of the targeted environment through interviewing affected people. Based on the preliminary research on the current state of child obesity in the Surco district of Lima, Peru, two key users have been identified for the relevant social problem. As the public health problem targets child obesity, the identified main user is the children whereas the parents take over the role of the supportive user. The study Growing Up in Singapore Towards Healthy Outcomes (GUSTO) of National University Health System [NUHS] (2024) has proven that lifestyle patterns in early childhood have a significant and long-lasting impact on health outcomes when they grow older. Consequently, the main users are primary school children between the age of 6 and 11 years in the Surco district of Lima, Peru in order to start early on by educating on a healthy lifestyle and establishing an active routine. As a means to get a better understanding of the main user, a user profile is created including personality traits, interests and frustrations as it is detailed in **Appendix F**. Eight-year-old Diego attends the third grade of the public school of Surco, Lima, Peru. Besides the two hours of

physical activity per week, the boy does not participate in any additional sports classes outside of school due to the limited financial resources of his parents. Diego is interested in playing with his friends such as football, but due to his introverted personality, he does not have a lot of friends and prefers to play video games online. Additionally, his health exam indicates obesity and type 2 diabetes which greatly discourage his self-esteem. His health issues aggravate further his participation in physical activities.

A child is still very dependent on their parents as they shape the child's lifestyle and eating habits as well as provide the available resources. The development of obesity among children is greatly influenced by the parents based on two factors – genetic vulnerability that is passed onto children and the environment created within their home. Especially, in low and middle-income households the tendency towards child obesity is higher due to the limited financial resources to lead a healthy lifestyle (Preston et al., 2015). A study in the Journal of Consume Research of Moore et al. (2016) shows that child obesity is interlinked with parent-child interactions and with what eating patterns and activity behaviors are followed by the parents. Therefore, the parents of the main user cannot be ignored in the design thinking process, since they are the ones who have to approve the solution and provide the necessary resources. The target user is two-fold. On the one hand, the proposed solution must be accepted and desirable for the children, because it should ultimately support the reduction of child obesity. On the other hand, it has to be accepted, feasible and viable for the parents.

2.2 The User Pain

It has been reported by Organización Panamericana de la Salud [OPS] (2021) that only 24.8% of school children in Peru are engaging in physical activity for at least 60 minutes/day for five or more days. Even more important to highlight is that only 2.2% of the students declared to have more than three or more days of physical education in school. A big proportion

demonstrates sedentary behaviors such as watching TV, playing computer games or scrolling through social media. A sedentary lifestyle presents hidden health dangers and an independent risk factor for child obesity. Furthermore, the unhealthy food groups and diets rich in fat, salt and sugar have become increasingly popular. Diets rich in saturated fats and trans fats such as meat or dairy, representing high energy density and poor micronutrients, are proven to promote weight gain and consequently obesity. The consequences are far-reaching, impacting physical health, social and emotional well-being and self-esteem (Sahoo et al., 2015). Obesity causes major risks for the development of cardiovascular diseases, type 2 diabetes and respiratory issues but also mental health problems (Bonilla-Chacín et al., 2013).

Numerous challenges contribute to the rising rates of child obesity. The identified need is the lack of education and awareness about health problems associated with obesity. Another major pain point is the lack of access to affordable and nutritious food options which increases the difficulty of providing a balanced meal for their children. The scarcity of these resources is often even higher in low-income households, as economic constraints severely limit the choice of food options (Preston et al., 2015). Additionally, children are restricted from engaging in physical activity measured by the hours of regular exercise per week which falls well below the recommended levels. This was validated in the process of conducting street interviews. Based on that, an urgent need for a more active lifestyle is identified. The demand for physical activities is further constrained by the financial limitations of a substantial proportion of households – particularly those with children in public schools of Surco, Lima, Peru. Furthermore, inadequate community infrastructure and limited offer of safe public spaces create an additional barrier to addressing obesity among children (De Jong, 2024).

2.3 Social Development Goals (SDG)

Peru is in the 64th position out of 166 countries achieving the Sustainable Development Goals (SDGs) as indicated in **Appendix G** (Sustainable Development Solutions Network, 2024). Considered a severe chronic medical condition, child obesity is reaching epidemic levels globally and is affecting the quality of living. The public health challenge increases the risk for non-communicable diseases (NCDs) such as cardiovascular diseases, diabetes and forms of cancer. In 2022, more than 390 million children aged 5-19 years were considered overweight and an additional 160 million living a life with obesity (World Health Organization, 2024). In the case of Peru, 38.4% of children between 6 and 13 years are affected by being overweight or obese with prevalence in the urban regions – 22.4% accounting for overweight and 16% for obesity, which is considered a very high problem by UNICEF (UNICEF et al., 2023).

Child obesity can be connected to the two SDGs; 02 Zero Hunger representing food insecurity and poor nutrition and 03 Good Health and Well Being representing a healthy lifestyle. Both SDGs are categorized as remaining major challenges within the country with a stagnating trend of improvement. SDG 02 is defined as ending hunger, achieving food security, improving nutrition and promoting sustainable agriculture. Obesity is implied in target 2.2 as a means of “ending all forms of malnutrition” targeting both undernutrition and overnutrition. The associated indicator is a prevalence of obesity with a BMI of more than 30 of the adult population. In Peru, this indicator shows a negative trend with a decreasing score. In particular, middle- and low-income countries struggle with this double burden of malnutrition. SDG 03 is defined as ensuring healthy lives and promoting well-being for all at all ages. Obesity is indicated in target 3.4 in terms of “reducing mortality from NCDs and promoting mental health” targeting obesity as a risk factor and associated health consequences. The mortality rate attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease is used as

an indicator for this target. The WHO has reported that this SDG target is on track in Peru. Obesity prevention and treatment are crucial to further maintain SDG 03 (Sustainable Development Solutions Network, 2024).

Indirectly, SDG 17 Partnerships for the Goals is also linked with the social problem of obesity. In particular, as a means of implementation, this SDG complements taking a holistic and cross-sector collaborative approach to face child obesity. In Peru, the challenges associated with SDG 17 remain with a moderately improving trend that is still insufficient to achieve the target (Cooper, 2019).

2.4 Associated Metrics

As mentioned above, the impacted SDGs demonstrate the complexity of the relevant social problem and emphasize the need for continuous and greater efforts in several areas to achieve effective and sustainable results. In order to do so, metrics are vital for monitoring the improvements. The metrics provide a framework for the assessment of the progress in addressing child obesity in Peru aligned with the SDGs. The target metrics associated with the two main SDGs above are very broadly indicated and do not specifically target child obesity and our target user, primary school children aged between 6 and 11. For this reason, the associated metrics are more tailored to the relevant social problem.

The metrics related to SDG 02 are the BMI of children between 6 and 11 years and the proportion of children with BMI above the 95th percentile indicating obesity. Since obesity is influenced by the habitual diet, another relevant metric is the percentage of households regularly consuming nutritious foods that comply with the dietary guidelines such as daily consumption of fruits, vegetables and whole grains (Nutrition and Food Safety [NFS], 2016).

The associated metrics to SDG 03 target the levels of physical activities and the development of NCDs. The measurement of physical activity can be monitored by the percentage of children adhering to 60 minutes of moderate exercises per day and the average number of hours per week that they engage in sports classes outside of school (More Physical Activity, 2020). Also, the number of affordable sports classes offered to children is considered an indicator. Additionally, the reduction of sedentary behavior should be measured based on the screen time of children per day. Associated metrics for NCD development are the number of type 2 diabetes cases among children below 20 years and its mortality rate. The focus should be put on those NCDs that are linked to obesity as a contributing factor (Cooper, 2019).

2.5 Scalability Potential

It is significant for the proposed social program to feature scalability potential in order to extend and spread the impact beyond the initial target. During the first stage, the main target point of the consulting project is the primary schools in the Surco district of Lima, Peru. The scalability potential for child obesity is threefold by structuring it into three main focus areas age group, regional, and collaboration-wise. First, the social problem does not only affect primary school students from 6 to 11 years old but impacts further age groups. The potential has been identified to scale the program by expanding to secondary schools, kindergartens and even universities. This allows for an opportunity to reduce obesity in general across various stages of education and promote healthy habits from early childhood through the teenage years and into adulthood. Secondly, the child obesity issue reaches beyond the Surco district, consequently, this scalable model can extend regionally beyond Surco, reaching other districts of Lima and regions in Peru that share similar demographics and characteristics. Thirdly, by fostering collaboration, a supportive community can be created that empowers students and residents alike to live a healthier life. The introduction of collaborative efforts through

partnerships with corporates will be crucial in the scalability. These collaborations increase the available resources and effectiveness of the program building a sustainable model that can be scaled to other regions (Riani, 2024).



Chapter III: User (and Customer) Research

3.1 User Profile

The research group developed a user persona after having interviews with students within the targeted age group (6 to 11) as well as their parents. After conducting the more commonly seen traits and interests, a fabricated user is created for a better understanding of the targeted user (Babich, 2017).

The user persona is called Diego Mamani, Diego is an 8-year-old third-grade student attending a public school in Surco, Lima. He attends school from 7:30 a.m. to 1:30 p.m. Monday to Friday. Diego has a low level of self-esteem and displays a higher degree of introverted behavior. His interests include social interaction, technology, video games, and football. Diego currently faces health challenges, including being overweight, respiratory issues, and Type 2 Diabetes. His primary objectives are to learn about a healthy lifestyle through practical activities and to maintain a healthy weight. Diego's frustrations include a lack of access to nutritional knowledge, unawareness of the impact of poor nutrition, and difficulty integrating a healthy lifestyle into his daily routine.

The user profile is divided into six aspects, providing a comprehensive view of the user persona's life and associated challenges (see **Appendix H**):

Biography:

Diego Mamani lives with his parents and siblings, and his daily life is shaped by his experiences both at school and at home. Diego attends school in the mornings, where he participates in standard academic activities, including 2 to 3 hours of physical education each week. Despite his regular attendance and participation, Diego struggles with low self-esteem and a lack of confidence (Strauss, 2000), he often feels isolated and wishes to have more friends.

His feelings about his physical appearance worsen his lack of confidence, making social interactions at school more challenging.

Social Circle:

Diego's social interactions are primarily centered around his classmates, with whom he shares a similar daily schedule. However, Diego prefers the comfort of online interactions over face-to-face communication. He enjoys spending time with friends through digital social platforms rather than in person, indicating a preference for the safety and control that the online environment provides. Diego's closest social relationships are with his family, particularly because he is not involved in any extracurricular activities such as sports clubs or teams. His social circle is limited, which further reinforces his feelings of isolation. Diego also tends to socialize in smaller groups when he does interact with others, which may be avoiding the discomfort of larger social settings where he might feel more self-conscious.

Family:

Diego's family plays a crucial role in his life, particularly his mother, who is deeply involved in his daily care. She is responsible for preparing his meals and ensuring that he has a packed lunch for school every day. The family is characterized by values such as loyalty, respect, and modesty, which are instilled in Diego from a young age. Family time is an essential part of Diego's daily routine, especially during dinner time, when the family gathers to share meals and spends time together. Diego's parents work hard to provide for the family, often balancing financial constraints with the need to meet the basic needs of their children. Despite their care and involvement, the family's limited financial resources sometimes affect the ability to provide a varied and nutritious diet or additional sports classes, which is a significant factor in Diego's ongoing health challenges.

Activities:

Diego's daily activities are relatively structured, revolving around his school schedule and some recreational activities. During recess, he enjoys playing games like "catch" or football with his classmates, although his participation is limited by his physical condition. Outside of school, Diego is drawn to digital entertainment, spending much of his free time playing online games, watching television, and scrolling through social media. These activities provide him with a sense of enjoyment and a way to escape the pressures he feels in his physical environment. His schoolwork occupies him during the afternoons, and he occasionally hangs out with his peers. However, Diego's engagement in physical activities outside of school is minimal, which is concerning given his health issues. The lack of regular, structured physical exercise outside of school contributes to his struggles with obesity and related health conditions.

Problems:

Diego faces several significant challenges that impact both his physical and emotional well-being. One of the primary issues is his weight. Diego is overweight and has been diagnosed with Type 2 diabetes, conditions that are compounded by respiratory problems. These health issues not only affect his physical capabilities but also his self-esteem and social interactions. Diego's peers occasionally bully him because of his appearance, further diminishing his confidence and making him more withdrawn (Pont et al., 2017). His family's financial limitations restrict their ability to provide a consistently nutritious diet, which is crucial for managing his weight and overall health. Moreover, Diego lacks access to comprehensive knowledge about healthy eating and lifestyle practices, which leaves him and his family ill-equipped to address his health concerns effectively. The combination of these factors creates a cycle that is difficult for Diego to break without external support and intervention.

Beliefs:

Diego's beliefs and values are shaped by his experiences and the environment in which he is growing up. He places a high value on the taste of food, which may be a result of both cultural preferences and limited exposure to healthier food options. Diego also finds emotional safety in his online friendships, preferring virtual connections where he feels less judged and more accepted. This reliance on digital interactions is a significant aspect of his life, particularly given his difficulties with face-to-face socialization (Galea & Tracy, 2014). Despite his family's religious background, Diego has not developed a strong interest in religious practices, possibly due to his focus on meeting family expectations and managing his own personal challenges.

3.2 User Experience Map

According to Yale University (n.d.), journey maps are user experience (UX) visualization tools to gather information about the process it takes to achieve a goal. The map combines storytelling, visual design, and empathy allowing to enhance the understanding of how the users experience the service or product, considering their feelings and perceptions (Rodriguez, 2021). This tool can be adapted for structuring youth activities and creating impactful projects for children and parents. Ellis et al. (2022) introduce the "experience journey map" which is a tool that breaks down an activity into stages that are designed to maximize engagement, immersion, and absorption. For example, in youth programs, the journey map can help in creating a coherent and immersive experiences that not only entertain but also foster meaningful development outcomes.

For this proposal, the journey map has been adapted to the stakeholder journey map, which will identify the pain points and opportunity points of the two relevant groups: children and parents, in the context of the Municipality of Surco. To gather the information, a sample of ten parents and ten children was taken from the "San Roque" Market which is located in the

district of Santiago de Surco (**Appendix I**), who were surveyed to learn about their children's eating habits and physical activity as demonstrated in **Appendix J** (Ortbal et al., 2016).

Among the main findings obtained from the survey (see **Appendix K**), it was observed that the families with children studying in a national school prepare the food that the child will eat during the day, in addition, the child does not bring extra money to school that would allow them to have access to sugary products or products with saturated fats. These results led the research group to suppose that the problem of obesity could be related to the lack of physical activity performed.

In the case of children, the map was applied to understand and identify their needs and emotions throughout a typical day, concerning their extracurricular activities and food (see **Appendix L**). In regards to the pain points, it was observed that the child does not engage in sufficient physical activity due to various factors. These include the use of public transportation, insufficient time during school breaks, and the excessive weight of the backpack, which once again led the child to rely on public transportation instead of walking.

In the case of parents, the map was applied to the decision-making process regarding the extracurricular activities in which their children should participate, as well as decisions related to food (see **Appendix M**). Among the primary concerns of the parents regarding nutrition are the prices of food in the market and time management, influenced by the distance between his home and workplace. Furthermore, for the parents, the concept of a well-nourished child is mainly associated with the child not feeling hungry throughout the day.

Regarding physical activity, the monthly budget and public safety issues were identified as key pain points. From the perspective of the parent, these factors represent the main limitations preventing their child from participating in more extracurricular physical activities.

3.3 Identification of the need to solve for the user

During the process of ideation, the group decided to focus on either one of the following two influential aspects, the diet, or the physical activity habits of the user, then analyzed what are the potential obstacles that both the parents and children might face.

Diet:

One of the critical needs for Diego's family is the ability to enhance their daily diet without increasing their budget. Given their financial constraints, it is essential for the family to find ways to incorporate more nutritious foods into their meals without exceeding what they currently spend (Cheatham et al., 2021). The study emphasizes the importance of adopting cost-effective strategies that prioritize nutrition while staying within financial constraints. This aligns with the key aiming of focusing on finding affordable, nutritious ingredients and better food choices for families who may have limited resources.

To address Diego's health issues, the family needs to adopt healthier cooking styles. This could involve reducing the use of unhealthy fats, sugars, and processed foods while incorporating more fresh vegetables, lean proteins, and whole grains into their meals. The family would benefit from learning new cooking techniques that preserve the nutritional value of foods and make meals both healthier and enjoyable. Also, Both Diego and his parents need to enhance their knowledge about healthy food. Understanding the basics of nutrition, such as the benefits of whole foods over processed options and the importance of a balanced diet (American Academy of Pediatrics, n.d.).

Diego also needs access to healthier food options during school hours. Schools play a pivotal role in shaping children's eating habits, and ensuring that healthy snacks and meals are available can support the dietary needs of students like Diego (Harvard T.H. Chan School of

Public Health, n.d.). This might involve the school offering more nutritious lunch options, limiting the availability of junk food, or educating students about healthy eating habits.

Physical activity:

A need is for Diego's parents to facilitate more opportunities for physical activity. Regular participation in sports and other physical activities is crucial for managing Diego's weight and overall health. The family needs to explore affordable or free options in their community, such as local sports teams, recreational programs, or even family-led activities like walking or biking. Encouraging physical activity as a family could also strengthen their bond while improving their collective health (Algoblan et al., 2014), allowing families to tackle the obesity issue as a unit.

Diego needs to increase the amount of physical activity he engages in daily. Currently, his activity levels are insufficient to manage his health conditions effectively. Integrating more movement into his daily routine is essential, whether through extended recess periods at school, structured physical education classes, or extracurricular activities (Harvard T.H. Chan School of Public Health, n.d.). Additionally, the family could incorporate more active playtime at home or in the community.

After considering the feasibility of different solutions, the influences on the users and the time and resources constraints of the project, the next step is to shift the focus of need to the sports aspect, emphasizing on how to provide more opportunities for physical activity.

Chapter IV: Product or service design – Solution

4.1 Conception of the product of service

The conception of the proposed program has been a collaborative effort of the research team. Based on the identified needs that are outlined in section 3.3, six associated questions were generated that provided support guiding through the groupthink ideation stage of design thinking. The guiding questions are demonstrated in **Appendix N**. These questions formed the basis for the brainstorming session to generate multiple creative and innovative ideas that meet the target of the social problem and the associated user. The creative process followed IDEO's approach of splitting the process in two cycles – diverging for creating a large set of choices and converging for narrowing down the focus to make choices and refine ideas (IDEO, n.d.). The brainstorming process was done for each question separately in order to focus on the specific need and apply divergent thinking. First, brainstorming by writing ideas down on post-its was done individually. The ideas ranged from growing own food in a community garden, introducing a monthly educational food day to offering more affordable sports activities. Once finished with the idea creation stage, these developed ideas were shared and explained in more detail among the team members. Together as a group, each idea was respected offering valuable feedback and input without judgment. This procedure was repeated for each question tailored to the specific need (Gregersen, 2018).

Upon the completion of the brainstorming session, the best idea was selected for each identified need. For the improvement of the daily diet, growing own food in community gardens with the support of health professionals for educating on different diet options was considered to have great potential. Similar to the need of improving healthy cooking styles, the idea of monthly provisions of healthy and seasonal recipes was developed. The best ideas generated focusing on the needs of the children were a health day including education on diet options and

an active lifestyle or setting up a fruit and juice stand at school. All ideas were then rated based on a cost-impact matrix. A cost-impact matrix supports the visualization of the advantages and disadvantages of an idea. Based on this matrix specific ideas can be prioritized and refined according to the position such as quick wins (see **Appendix O**) (Six Sigma Daily, 2022). The criteria for the ideas to combat child obesity were on the one hand costs being split into less than 1,000 S/, 1,000 – 2,000 S/ and more than 2,000 S/and on the other hand impact being split into just the kid, kid and family, and community. The best-rated idea with the highest impact and lowest costs was offering sports classes at the community center in collaboration with a local gym. This idea aligned with the user feedback where it was identified that there is a lack of affordable and free sports classes and the schools do not cover the necessary hours of physical activity per week.

Before proceeding with the prototyping stage, the proposed solution was tested in terms of the innovation sweet spot including viability, desirability, feasibility and integrity. The solution serves the user's need (desirability), scalability to other regions, age groups and collaboration-wise (viability), the operational implementation with low costs (feasibility) and the collaborative effort (integrity) (Board of Innovation, n.d.). The prototype of the selected idea is a healthy lifestyle initiative that offers classes to children between 6 and 11 years. The determined goal of the program is the awareness increase of healthy living and combat child obesity by providing more affordable sports classes to increase the number of hours of physical activities for kids. To ensure consistent participation and engagement of the children, the activities should be varied ranging from team sports, fitness games, obstacle courses, dancing and stretching routines. Three main characteristics determine the program for child obesity. First, accessibility, including cost-free participation and convenience of transportation. Second, collaboration with a local business that is dedicated to generating a social impact. Third, engagement by organizing weekly sports classes for a whole semester. There are multiple

stakeholders involved in the initiative. While children are the focus group, parents play a supportive role in the enrollment and decision process. As a corporate stakeholder, the local gym company Smart Fit providing the classes is considered due to its dedication to sustainability. As the program organizer, the municipality is intended.

4.2 Development of the narrative (canvasses, narratives, etc.)

After identifying the viable solution that sought to align user needs and cost, the following step was to ask for feedback. In order to obtain the information that would enrich the proposal, the proposed program was introduced to the parents of Santiago de Surco. To gather the feedback, the tool applied was the relevant target canvas (see **Appendix P**). In this canvas, the information is divided into four sections: interesting stuff, constructive criticism, new questions, and new ideas.

From the parents' perspectives, it was interesting and also perceived as a benefit that the program would be focused on physical activities that would not require additional equipment. It means that they will not have an additional expense in their monthly budget.

Initially, the idea was that the activities would take place in the community sports facilities of the district, but the constructive criticism identified that this could generate additional expenses for families in terms of transportation, snacks and other costs. Considering this new insight, the location was changed to the school premises.

In the initial proposal, classes were scheduled to take place from 4:00 to 6:00 p.m., with the first grades attending from 4:00 to 5:00 p.m. and the remaining grades from 5:00 to 6:00 pm. However, during the feedback process, new questions led to identifying those parents preferred classes to be held immediately after school hours to reduce the number of trips using the transportation during the day.

Additional concerns raised included whether the safety of the children and the program would have health control to see the improvement. Taking these concerns into account, the proposal was adjusted so that classes would be held immediately after school hours, from 1:30 p.m. to 2:30 p.m. The school was chosen as the ideal location, as it is a safe and familiar space for the participants. Regarding measuring health improvements, the program will have a health control every 15 days in collaboration with the Universidad Femenina del Sagrado Corazón (UNIFE), which is an ally at this time of the Municipality of Surco, to share the improvement and motivate the parents to participate in the initiative.

Also, during the feedback process, new ideas emerged, such as increasing the number of exercise hours per week and having staff trained in first aid, as well as a nutritionist.

Regarding the inclusion of a nutritionist, this was not considered for the pilot phase of the program, as the primary focus is on increasing physical activity. However, it is recommended for the second phase. In terms of first aid training, according to article 27 of the Occupational Safety and Health Law N° 29783 (Congress of the Republic of Peru, n.d.), all personnel in Peruvian companies must participate in training programs on topics related to safety and health. As such, the instructors at Smart Fit, who receive ongoing training (Smart Fit, n.d.), will be prepared in this area. The increase in weekly exercise hours will also not be part of the pilot phase but will be considered in the second phase, depending on the development of the first stage in collaboration with Smart Fit.

Finally, after incorporating the received feedback and implementing the necessary adjustments, the program and the responsibilities of each stakeholder (see **Appendix Q**), as well as the characteristics for the program's launch were established (see **Appendix R**). In addition, a suggested flyer was developed to invite parents and children to participate in the program (see **Appendix S**).

4.3 Innovative and disruptive nature of the product or service

Traditionally, sports activities and physical education have been either a part of the regular school curriculum for all students, or an extracurricular option that often requires additional fees or parental involvement. This program disrupts that model by fully integrating sports classes into the school environment without any additional costs and efforts to families (Altunisik et al., 2023). This is a voluntary program so it is possible to identify who are the committed students that are willing to put in the extra effort and become a regular member of the program.

The partnership with Smart Fit, a local gym, introduces an approach to public-private collaboration in addressing public health issues. Rather than relying solely on school resources or government funding, this program leverages the expertise and resources of a private business to deliver high-quality physical education. This collaboration is innovative because it aligns the interests of a business with community health goals, creating a sustainable model where businesses contribute to the well-being of the community while also enhancing their brand reputation. One notable example is the “Lima Come Sano” program launched by the Metropolitan Municipality of Lima. This program encourages healthy food options in schools and nearby establishments by partnering with local businesses to promote healthier menus (World Health Organization, 2021), similar to how Smart Fit is partnering with the Municipality of Surco’s initiative to promote physical activity.

The program includes a variety of activities such as ZUMBA, team sports, fitness games, dance courses, and stretching routines. This diversity is innovative because it caters to different interests and fitness levels, ensuring that all children can find something they enjoy and can participate in comfortably (Youth Sport Trust, n.d.). This inclusive approach is disruptive

because it challenges the one-size-fits-all model of physical education, which often fails to engage all students, particularly those who are less athletic or have special needs.

The YMCA Surco Youth Fitness Program (YMCA en Linea, n.d.) is a well-established initiative known for its commitment to youth health and fitness. However, it generally operates within a traditional framework that requires physical attendance at YMCA facilities and often involves membership fees. While the YMCA offers structured fitness programs and has a strong community focus, it may not reach all segments of the population, particularly those facing financial constraints or logistical challenges in attending external activities (YMCA Peru). In comparison, the healthy lifestyle initiative is disruptive in its approach by integrating physical fitness directly into the school day, ensuring that all students have equal access. It eliminates financial barriers and leverages local business partnerships to provide high-quality, diverse, and inclusive fitness activities. This offers a more integrated and long-term oriented solution to childhood obesity and fitness than traditional models like the YMCA Surco Youth Fitness Program.

4.4 Value Proposal

The Value Proposition Canvas (VPC) is a useful tool for showcasing the project's value proposal by aligning its target audience's specific needs and desires. By identifying the pain points and gains of the consumer, the canvas ensures a strong fit between the program and its users (Strategyzer, 2024b). This tool is also used to demonstrate a product-market fit, amplifying the likelihood of success (Tsopo, 2023). In the development of this proposal, it was used to demonstrate the alignment between the consumer profile and the value proposition for parents and children.

In the VPC for the children (see **Appendix T**), the *Customer Profile* segment identifies key challenges, including a lack of safe spaces and age-appropriate exercise options, while

highlighting the desire for regular participation and social interaction. In response, the *Value Proposition* emphasizes the provision of free after-school programs, facilitated by professional instructors in accessible school venues. The program aims to deliver an inclusive and enjoyable environment where children can stay active and improve their health. The characteristics of the program directly address the pains, while generating long-term benefits.

In the VPC for the parents (see **Appendix U**), the Customer Profile highlights parents' need for cost-effective extracurricular activities that contribute to their children's physical and academic development while they balance work, household duties, and parenting. It also addressed logistical challenges, such as transportation and the potential interference of activities with after-school study schedules. In response, the Value Proposition emphasizes the provision of free, school-based physical activity classes immediately after school hours, eliminating the need for extra transportation and minimizing safety concerns. By delivering the program in a familiar environment with professional instructors, the program creates peace of mind for parents, fostering greater parental engagement and support.

4.5 Minimum Viable Product (MVP)

A Minimum Viable Product (MVP) is a strategy where a product or service is launched with enough features to meet early customer needs and validate assumptions in the market (Thompson, 2013). This approach allows companies to gather user feedback, improve the offer, and optimize resources. The MVP enables testing critical hypotheses, ensuring that the product meets the consumer's needs (Eisenmann, 2021; Garner, 2016).

In services, this methodology is useful because it enables rapid learning while minimizing the risks (Piloto, 2021; Ries, 2011). The continuous feedback loop in the MVP process allows teams to adapt quickly to customer needs, aligning them the market demand.

This process supports more efficient resource allocation, faster iteration, and a better chance of long-term success (Garner, 2016; Thompson, 2013).

Design, usability, reliability and functionality are the main characteristics to be met by the MVP (Ries, 2011). For the program, these are described in detail in the *Table 2*. Once the program has been deployed, these should be updated with users' feedback while the metrics described in the subchapter 2.4 are being evaluated.

Table 2

Minimum Viable Product Characteristics of the Program

Characteristics	Detailed Information
Design	The program is designed to provide an interactive experience for both stakeholders (parents and children).
Usability	Through the interviews and changes adjusted, it was possible to validate the parents' intention to enroll their children in the program.
Reliability	There is confidence in the results expected through the program, as it is already associated with the results shown by the Smart Fit chain of gyms.
Functionality	The program is oriented to the identified needs of both stakeholders (parents and children). Also, it is focused on the problem identified by the Municipality of Santiago de Surco.

Chapter V: Business Model

5.1 Business Model Canvas

The “B” Canvas is a tool more suitable for social programs because it is focused on the social purpose and beneficiaries rather than economic profitability (Sobejano, 2015). Unlike the traditional Business Model Canvas, which prioritizes value creation for customers and resource optimization to maximize business profit (Garner, 2015), the “B” Canvas is structured around solving social issues, by enabling clear identification of the resources, activities, and partnerships to generate a positive impact in the community. This approach facilitates the co-creation involving all the stakeholders and ensures long-term sustainability (Strategyzer, 2024a). This tool has been applied to the project (see **Appendix V**) and will be detailed throughout this subchapter.

The primary segment for this program is the public primary school system, which is responsible for organizing and monitoring the initiative within its facilities. The secondary segment consists of local gyms, like Smart Fit. The end-users are public primary school students who will participate in the classes.

The identified problem is the rising incidence of childhood obesity in the district of Santiago de Surco, driven by the lack of affordable options for physical activity and familiar infrastructure to support these activities. Low-income families, do not engage in the recommended number of physical activity hours per week, increasing the probability of health issues related to sedentary lifestyles. The limited opportunities for children to engage in regular physical exercise contribute to the growing health crisis.

The initiative’s purpose is to increase awareness about healthy living and actively combat child obesity by providing affordable sports classes to primary school students. By

offering the program in a familiar and convenient location – public school facilities – the program aims to significantly increase the number of hours children spend weekly on physical activity. The initiative aligns with the public health goal of installing healthy habits at an early stage in life.

The value proposition of the program lies in the ability to offer free weekly sports classes for children, targeting low-income families who may otherwise not have access to such opportunities. The partnership with Smart Fit and the school ensures high-quality instructions and engagement. The program focuses on improving the overall health and well-being of children by providing an effective solution for the district.

To capture the target audience, the program utilizes in-school advertising as its main communication channel. The school distributes the information through newsletters, flyers, class announcements, and meetings with parents. This approach ensures that parents and children are well informed about the schedule and all the activities related to the program.

Building strong relationships is vital for the success of the program. Continuous community engagement ensures high participation and enhances the program's long-term sustainability. The collaboration between the Municipality of Surco, the school, and Smart Fit is fundamental to ensure the scalability potential of this program by deploying it in more schools.

The cost structure of the program involves two key components promotion and marketing, and operation costs. Promotional activities include the expenses associated with the design, printing, and distribution of flyers, posters, and social media campaigns. On the operational side, the cost includes the personnel involved in running the program, such as school staff and municipal employees who are responsible of the logistics and daily operations of the activities.

The key resources that support the program's activities are essential to its success. Smart Fit instructors serve as a main resource, offering their professional expertise in physical fitness and directly delivering the classes. School facilities are the physical environment necessary for the program. Additionally, promotional materials are indispensable in attracting attention and engaging the community. A coordination team composed of municipal, school, and gym staff manages the logistics, communication, and planning between all involved stakeholders. Technical resources like a sound system for playing music during the sessions and an improvement chart to track the health progress of each child are necessary resources to maintain high program quality and ensure positive outcomes for the children involved.

The key activities to ensure a successful implementation of the program include coordination and promotion. First, effective communication between the stakeholders to align goals and schedules. Additionally, promoting the program through posters, flyers, and social media increases visibility and ensures maximum participation. Organizing and delivering physical activity classes are core operational tasks, along with making sure that all students are actively participating in the sessions. Another crucial activity is implementing safety protocols, as this concern was mentioned in the previous chapters, safeguarding the well-being of the child is relevant for the parents. Finally, collecting feedback from stakeholders will enable continuous improvement of the program.

The Value Chain of the program is structured around the collaboration between key stakeholders to ensure its execution. The Municipality of Santiago de Surco manages and promotes the program, ensuring that all the communication and coordination tasks are efficiently handled. Smart Fit contributes by providing qualified fitness instructors who will deliver the classes, while UNIFE takes responsibility for monitoring the health and the improvement of the participating children. The public school offers logistical support, by

providing access to outdoor spaces and the gym venue for the classes. Parents play a crucial role in encouraging their children's participation in the program and creating a strong community bond. Finally, primary school students are the center of the value chain acting as the participants of the program, which will make them the main beneficiaries.

As the program is free of charge for the students and their families, the potential income streams to sustain the program will rely heavily on sponsorships from the community and corporates. In addition, potential partnerships with national or international health-focused NGOs could provide funding or resources. The involvement of corporate social responsibility (CSR) initiatives from other gyms could be an important source of income, helping to cover some costs.

The program aims to deliver measurable improvements in the child's health through key impact metrics. One primary metric is the average number of hours of physical activities per week per child, which will be one of the main indicators of the program's success. Another metric is the percentage of children with BMI above the 95th percentile, which will be tracked as a progress in reducing obesity rates. The last metric is the percentage of associated NCDs among children below 20 years. All these metrics provide a way to evaluate the success of the program in contributing to public health.

5.2 Financial viability of the business model

For the financial viability of the business model, the healthy lifestyle initiative operates on a limited budget provided by the Municipality of Surco. To ensure the project is sustainable and cost-effective, the program focuses on maximizing existing school resources such as gym venue, sports equipment, and available staff, reducing the need for additional investment. By leveraging these existing assets, the program minimizes operational costs. According to the Quick Wins Matrix (see **Appendix O**) as part of the financial planning, the estimated cost of

initial investment for the program would lay around 1,000 soles, focusing on promotion and operation at the early stage.

Additionally, the collaboration with private businesses like Smart Fit adds another layer of financial viability. Smart Fit contributes to the program as part of its corporate social responsibility (CSR) initiatives, providing certified trainers and fitness expertise without charging the schools or the municipality. This partnership not only alleviates the financial burden on the project but also aligns Smart Fit's brand with community health and wellness efforts, enhancing its corporate image (Baldo, 2013). Such public-private partnerships are key to ensuring that the program remains financially viable while still offering high-quality, inclusive activities to the children of Surco, even on a restricted budget. This approach ensures that both municipality and the private sector work together to improve community health outcomes without relying heavily on public funding alone.

5.3 Scalability/exponentiality of the business model

Throughout the ideation and business model creation process, the determined scalability factors for the relevant social problem were kept in mind. The scalability of the business model is rooted in its adaptability across the three main focus areas being age group, regional and collaboration-wise.

The health initiative is flexible in tailoring the program to different age groups ranging from kindergarten and secondary school children to university students. In terms of secondary school children and university students, the same approach and structure for the proposed solution in Subchapter 5.1 can be applied. The three key characteristics – accessibility, collaboration and engagement of the initiative – can be preserved. The venue is recommended to remain at the respective school or university. The fitness market in Peru is booming with

constant growth projections and persisting awareness of physical well-being. A study reported that there are approximately 2,200 gyms in Peru. The total number of gyms grows monthly by ten to twelve gyms due to the great demand (Garcia, 2022). Thus, there is a big supply of local gym companies which can be engaged when the program is scaled across further age groups. Also, the activity program is flexible and easily adaptable to the needs and physical conditions of the target age group. Many developed countries have already implemented various programs that engage children in physical activities and healthier food consumption. Extensive evidence suggests that promoting active participation in leisure activities significantly reduces childhood obesity rates and controls the expected increase in obesity levels over time (Musuwo, 2019). Regarding kindergarten children, there is also the potential to expand the initiative to include parents in the process by anticipating behavioral changes that facilitate active parental motivation for active lifestyles. The program's scope to tailor its activities and resources to the needs of various age groups strengthens its scalability potential.

The program is also designed to be scaled regionally. As the business model exhibits a low-cost structure and mainly incorporates available resources, the health initiative is not limited to the Surco district in Lima. The availability of local gyms throughout the metropolitan area of Lima as well as across Peru, ensures the collaboration aspect. The model can be effectively adapted to diverse community needs, ensuring its impact remains strong while expanding to a broader audience. The prerequisites for expansion into new regions are similar demographic and socioeconomic profiles to ensure the program's success (Hartmann & Linn, 2008).

The proposed solution includes a partnership with the local gym company Smart Fit. The business model for the health initiative, though, also shows great potential to be scaled through further collaborations. The program can be considered a facilitator of partnerships with

various stakeholders such as healthcare professionals, schools, or local food producers to extend the program by educating on healthy food consumption. These partnerships generate a network of stakeholders committed to combating child obesity by pooling resources to increase the impact by leveraging existing infrastructures and expertise (More Physical Activity, 2018).

All available initiatives and potential scalability opportunities require governmental support. Compulsory national policies on school-based health education and increasing awareness about the importance of active lifestyles are necessary to support action for obesity prevention. Nonetheless, the collaborative and flexible structure of the business model allows for rapid scaling, with each new partnership or community involvement expanding the program's reach and driving exponential growth (Musuwo, 2019).

5.4 Social sustainability of the business model

The business model supports the well-being of current and future generations by promoting healthier lifestyles, particularly through physical activity and community engagement. By focusing on the reduction of childhood obesity and promoting regular physical activity, the program directly supports the United Nations SDG, particularly SDG 2, SDG 3 and SDG 17. This initiative not only improves individual health outcomes but also fosters long-term healthy behaviors that benefit communities (United Nations, n.d.).

The program's key partner, Smart Fit, plays an essential role in achieving these objectives through its commitment CSR. By providing expert trainers and resources, Smart Fit helps ensure that the initiative is both socially impactful and sustainable. Their involvement is part of a broader trend of businesses aligning their CSR efforts with community health goals, thereby enhancing the quality of life in local communities. This collaborative approach, which involves schools, government bodies, and private businesses, fosters shared responsibility and ensures that the initiative has the support of community stakeholders. Additionally, by

reinvesting resources and experiences into program expansion and collaborating with more schools and municipalities, the business model not only sustains itself financially but also creates a cycle of positive social impact (Hipsher, 2021). This approach contributes to the continued promotion of health and well-being, ensuring that the program remains socially sustainable as it grows to serve more children and families.



Chapter VI: Conclusions and Recommendations

6.1 Conclusions

Childhood obesity in Santiago de Surco represents a critical public health challenge, which reflects the concerning global trend. This study has demonstrated that the issue is deeply rooted in socio-economic disparities, limited access to healthy food, and a lack of extra physical activities among children. Through the analysis of these factors, the research reveals the need for comprehensive, community-driven solutions that not only address the symptoms of obesity but also faces the causes.

The proposed program, designed in partnership with the Municipality of Santiago de Surco and Smart Fit, provides a sustainable and scalable option to increase physical activity among children in primary education. The program creates a collaborative framework that involves public institutions, local businesses, and parents. It also has the potential to be implemented abroad, within and beyond the district of Surco.

The findings of this thesis emphasize that combating childhood obesity requires lasting change, where education, physical activity, and community converge. The program's success will depend on its ability to adapt and scale, while addressing the needs of children. The program has also the possibility in becoming a reference in promoting healthier lifestyles and achieving Sustainable Development Goals (SDG).

6.2 Recommendations

In case of smaller schools with limited resources, the recommendation would be to expand the program to outdoor spaces like soccer fields, parks, or community spaces. Santiago de Surco has a variety of parks and open spaces that could be used. Hosting the sports classes in these outdoor settings can increase the visibility and accessibility.

To boost participation and ensure that parents enroll their children in the program, it would be beneficial to involve a national athlete who lives or is member of the Santiago de Surco community. A famous athlete could serve as a role model for the children, promoting the importance of an active lifestyle and healthy habits. It could also attract media attention, and increase the program's credibility.

Also, to ensure the participations of UNIFE in the program, it is recommended to establish a formal internship program between the Municipality of Santiago de Surco and the university. This partnership will allow students in fields as nutrition, physical therapy, and public health to gain practical experience by monitoring children's health, conducting assessments, and providing nutritional guidance as part of their internships.

Finally, to make the program more enjoyable, it is recommended to incorporate gamification tools into the physical activities. Rewarding the children participation through points, badges, or level, can motivate them to participate in the program. It will foster a sense of achievement and friendly competition, generating an environment where introverted or hesitant children would be able to participate in group activities.

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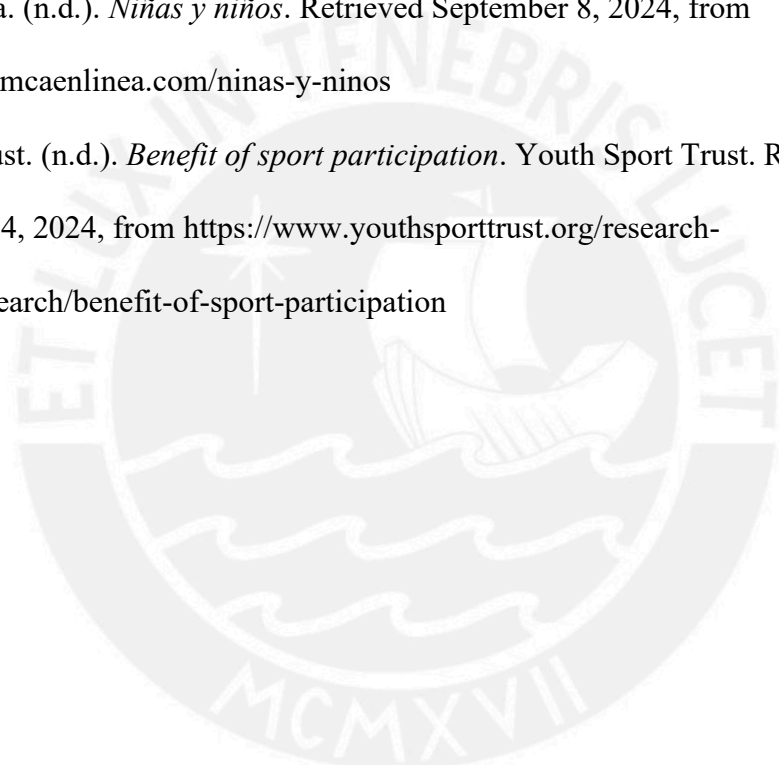
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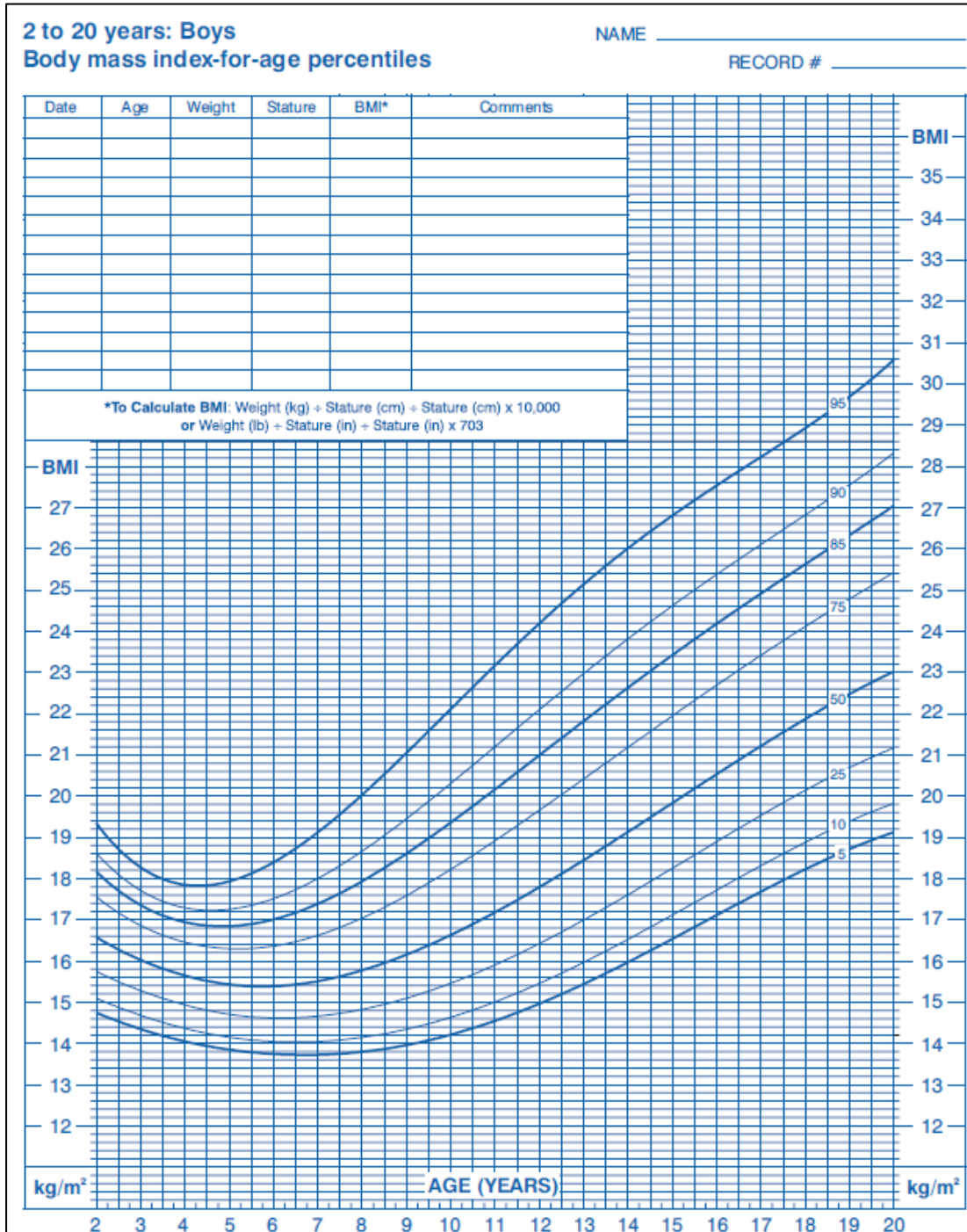
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Appendices

Appendix A

Table 3
CDC BMI Chart for 2 to 20 years - Boys

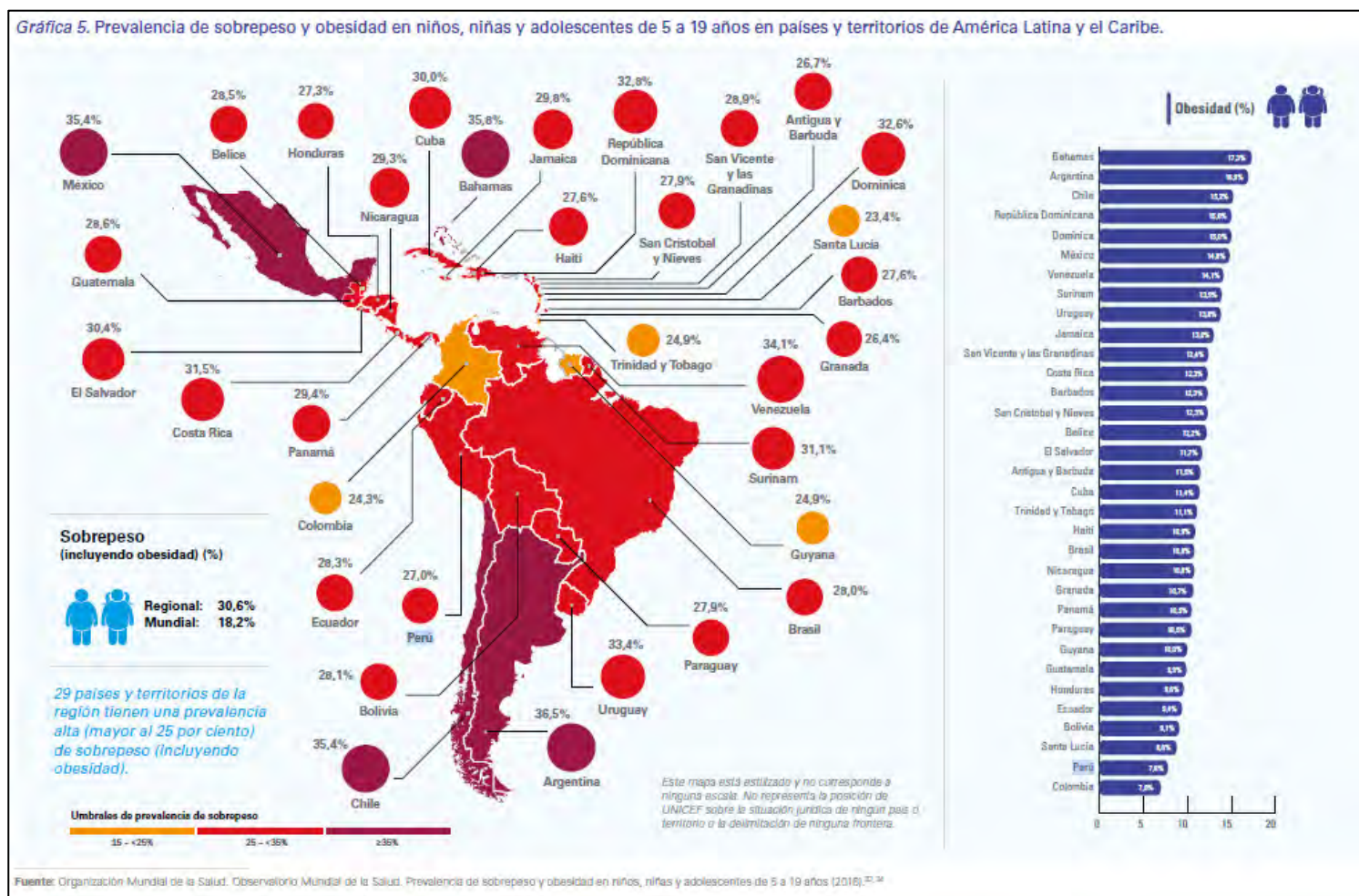


Note. Adapted from 2 to 20 years: Boys Body mass index-for-age percentiles of National Center for Health Statistics & National Center for Chronic Disease Prevention and Health Promotion (2000a)

Appendix C

Figure 1

Prevalence of Overweight and Obesity in Children and Adolescents Aged 5 to 19 in Latin America and Caribbean Countries and Territories



Appendix D

Figure 2
Hours distributed in Primary Education in Peru

ÁREAS CURRICULARES	GRADOS DE ESTUDIOS					
	1.º	2.º	3.º	4.º	5.º	6.º
Matemática	5	5	4	4	4	4
Comunicación	5	5	4	4	4	4
Inglés	2	2	3	3	3	3
Personal social	3	3	4	4	4	4
Arte y cultura	3	3	3	3	3	3
Ciencias y Tecnología	3	3	4	4	4	4
Educación física	3	3	3	3	3	3
Educación religiosa	1	1	1	1	1	1
Tutoría y orientación educativa	2	2	2	2	2	2
Horas de libre disponibilidad	3	3	2	2	2	2
Total de horas	30	30	30	30	30	30

Note. Ministry of Education (2020)

Appendix E

Table 5

List of Schools with Primary Education Level in the District of Santiago de Surco

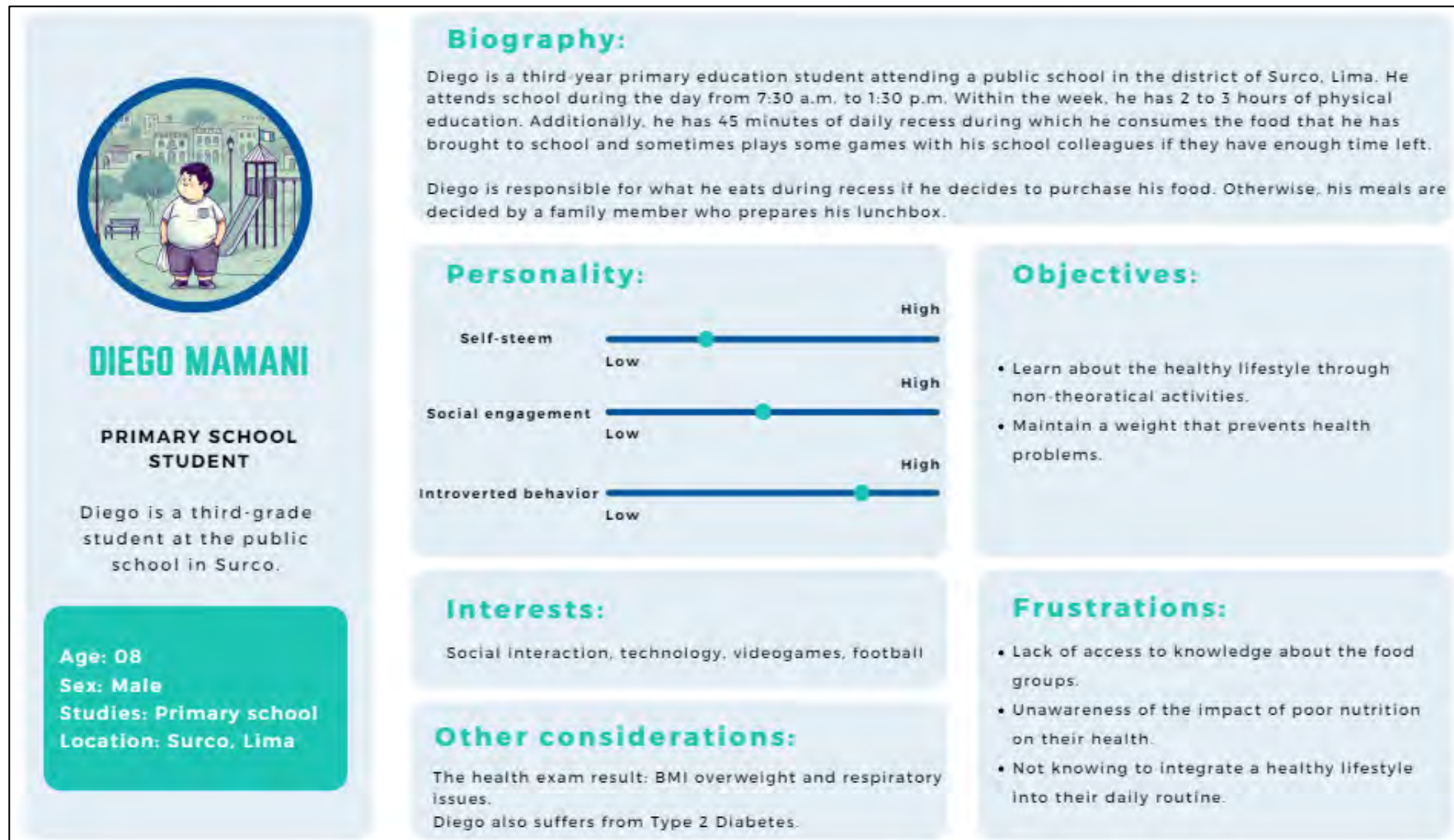
School	Education Level	Address
6047 Jose Maria Arguedas	Primary Education	Jr. Esteban Camere 500
6082 Los Proceres	Primary Education	Av. Alameda Pérez de Toledo S/N
7086 Los Precursores	Primary Education	Av. Francisco de Zela
Aplicacion IPNM	Primary Education	-
7087	Primary Education	Av. Andrés Tinoco 640, Urb. Monterrico Sur
Técnico FAP Manuel Polo Jimenez	Primary Education	-
6044 Jorge Chavez	Primary Education	Los Seibos S/N, La Capullana
7058 Maria de Fatima	Primary Education	-
7068 Abraham Roldan Poma	Primary Education	-
6043 Pedro Ventura	Primary Education	-
6087 Pablo Maria Guzman	Primary Education	Calle A Mz. J Lt.9 Villa Libertad
Alcides Vigo Hurtado	Primary Education	-
Mahatma Gandhi	Primary Education	-

Note. Adapted from Unidad de Gestión Educativa Local N° 07 (2016)

Appendix F

Figure 3

Biography, Personality, Interests, Objectives, Frustrations, and other considerations - User



Appendix G

Figure 4

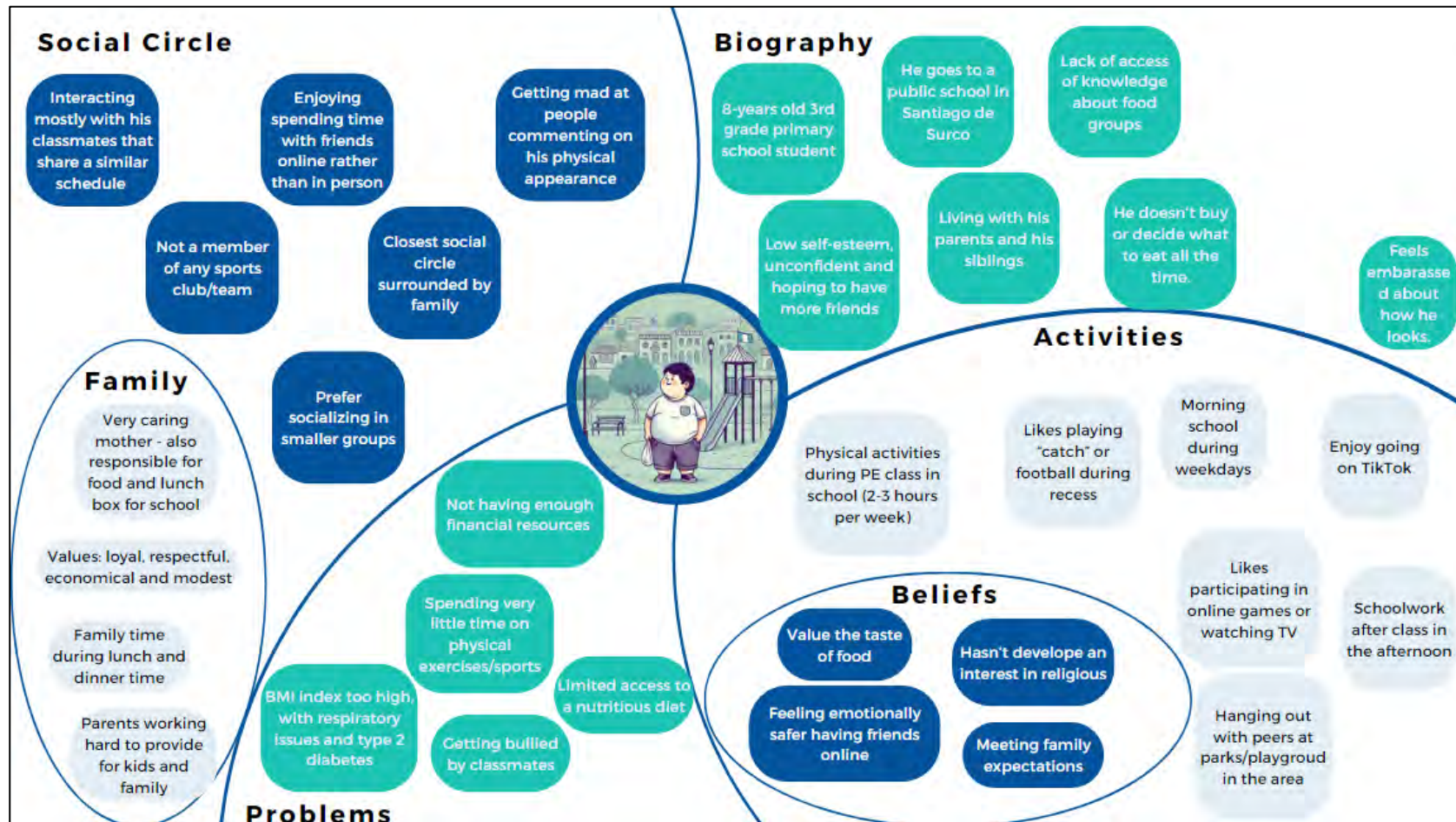
Peru: Sustainable Development Goals Overview



Note. Adapted from the website of Sustainable Development Solutions Network (2024)

Appendix H

Figure 5
User Profile - Child



Appendix I

Figure 6
Unofficial Feedback Gathering – Photos



Appendix J

Table 6

Unofficial Feedback Gathering - Questions

Unofficial Feedback Gathering - Questions		
	Targered on Parents	Targered on kids
In English	<ol style="list-style-type: none"> 1. Are you from Surco? 2. Are your kids attending a public or private school? 3. Which grade is the kid in? 4. How much time do your kids spend on sport per day/ week outside of class? 5. Are your kids in any sport clubs/teams? If yes, which one? 6. Does the school offer lunch or do you need to provide it yourself? 7. What do you believe contributes the most to your kids' health? 8. How many hours of PE per week does the kid have per week in school? 9. How many hours of recess does the kid have per day in school? 	<ol style="list-style-type: none"> 1. What do you spend your extra money on in terms of snacks? 2. What kind of activities are you playing during PE class inside of school? 3. During the daily break, do you participate in games or other activities (as soccer, volley, ...)?
In Spanish	<ol style="list-style-type: none"> 1. ¿Usted vive en Surco? 2. ¿El menor de edad asiste a un colegio público o privado? 3. ¿En qué grado de primaria se encuentra? 4. ¿Cuántas horas por día/semana invierte el menor de edad en actividades deportivas fuera del horario de clases? 5. ¿Participa el menor de edad en algún equipo o club? Si es el caso, brindar más detalle. 6. ¿El colegio a donde asiste el menor de edad brinda comida o ustedes prepara la comida en casa? 7. ¿Qué considera usted que contribuye más a la salud del menor de edad? 8. ¿Cuántas horas de Educación Física tiene el menor de edad por semana en el colegio? 9. ¿Cuántas horas de recreo tiene el menor de edad por día en el colegio? 	<ol style="list-style-type: none"> 1. El dinero extra, ¿En qué tipos de snacks los gastas? 2. ¿Qué tipo de actividades practica en el curso de Educación Física dentro del colegio? 3. Durante el recreo, ¿Participas en juegos u otras actividades? Por ejemplo, fútbol, vóley, etc.

Appendix K

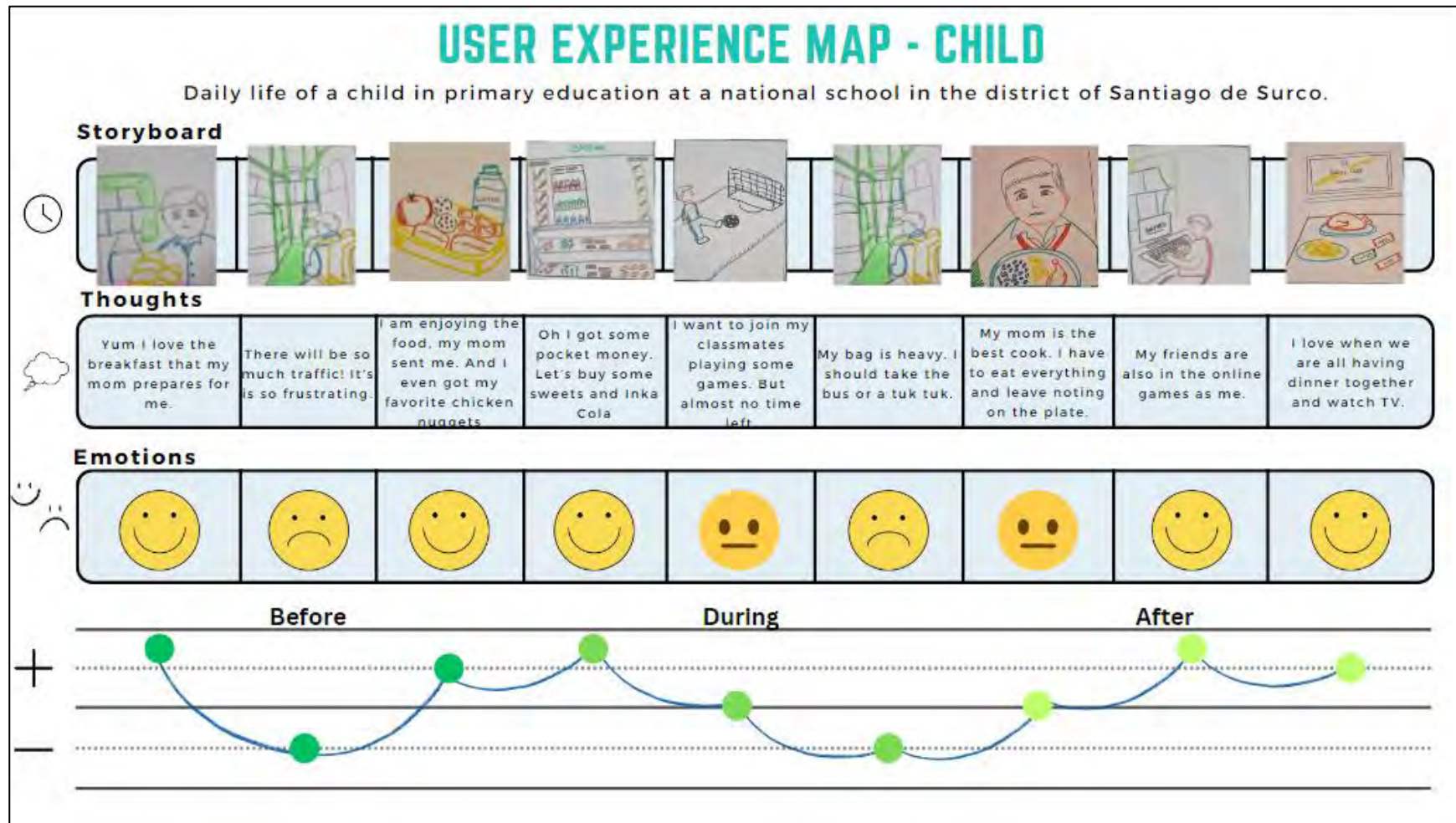
Table 7
Unofficial Feedback Gathering - Answers

		Unofficial Feedback Gathering - Answers	
		In English	In Spanish
Interview 1	Parent	<ol style="list-style-type: none"> 1. From Surco. 2. Public School. 3. 2nd grade of Primary School. 4. 0 hrs out of class per week. 5. No clubs or teams. 6. It is responsible of preparing the meal at home. Also it does not provide money to the child. 7. Food. 8. 2 hours of PE per week. 9. 1.5 hours of recess per day. 	<ol style="list-style-type: none"> 1. De Surco. 2. Colegio Nacional. 3. 2do grado de Primaria. 4. 0 horas de deporte fuera de clase. 5. No clubs or equipos. 6. Prepara la comida en casa. No brinda dinero extra al menor de edad. 7. Comida. 8. 2 horas de clase de Educación Física por semana. 9. 1.5 horas de recreo por día.
	Kid	<ol style="list-style-type: none"> 1. No extra money. 2. Mostly soccer. 3. Eat the lunch box and play catching. 	<ol style="list-style-type: none"> 1. No dinero extra. 2. Fútbol. 3. Come la lonchera y juega a las <i>chapadas</i>.
Interview 2	Parent	<ol style="list-style-type: none"> 1. From Surco. 2. Private School. 3. 5th grade of Primary School. 4. 6 hours out of class per week. 5. Swimming club. 6. Mosly provides money to buy the lunch box at school. It prepares the meal few times. 7. Food. 8. 2 hours of PE per week. 9. 0.5 hours of recess per day. 	<ol style="list-style-type: none"> 1. De Surco. 2. Colegio Privado. 3. 5to grado de Primaria. 4. 6 horas por semana fuera de clase. 5. Club de natación. 6. Suele brindar dinero al menor para comprar la lonchera en el colegio. Muy pocas veces prepara la comida en casa. 7. Comida. 8. 2 horas de clase de Educación Física por semana. 9. 0.5 horas de recreo por día.
	Kid	<ol style="list-style-type: none"> 1. It buys pancakes, ice cream. 2. Games and running 3. Eat lunch box and play soccer. 	<ol style="list-style-type: none"> 1. Compra pancakes y helado. 2. Juegos diversos y correr. 3. Come la lonchera y juega fútbol.
Interview 3	Parent	<ol style="list-style-type: none"> 1. From Surco. 2. Private School. 3. 3rd grade of Primary School. 4. 0 hrs out of class per week. 5. No clubs or teams. 6. The lunch box and the lunch is prepared at home (healthy food, fruits, <i>tortillas</i>). Also, it does not provide money to the child. 7. Food. 8. 3 hours of PE per week. 9. 1.5 hours of recess per day. 	<ol style="list-style-type: none"> 1. De Surco. 2. Colegio Privado. 3. 3er grado de Primaria. 4. 0 horas por semana fuera de clase. 5. No clubs o equipos. 6. La lonchera y el almuerzo suele ser preparado en casa (comida saludable, frutas, tortillas). Además, no le proveen dinero al menor de edad. 7. Comida. 8. 3 horas de clase de Educación Física por semana. 9. 1.5 horas de recreo por día.
	Kid	<ol style="list-style-type: none"> 1. No extra money. 2. Mostly volley and soccer. 3. Eat lunch box and play soccer. 	<ol style="list-style-type: none"> 1. No dinero extra 2. Mayormente volley y fútbol. 3. Come la lonchera y juega fútbol.
Interview 4	Parent	<ol style="list-style-type: none"> 1. From Surco. 2. Private School. 3. 1st grade of Primary School. 4. 2 hours out of class per week. 5. No clubs or teams (goes with friends and practice during vacations). 6. It is responsible of preparing the meal at home. Also it does not provide money to the child. 7. Food and sports. 8. 1 hour of PE per week. 9. 0.75 hours of recess per day. 	<ol style="list-style-type: none"> 1. De Surco. 2. Colegio Privado. 3. 1er grado de Primaria. 4. 2 horas por semana fuera de clase. 5. No clubs o equipos (va con sus amigos o practica en vacaciones). 6. La lonchera se prepara en casa. Además, no le proveen dinero al menor de edad. 7. Comida y deportes. 8. 1 horas de clase de Educación Física por semana. 9. 0.75 horas de recreo por día.
	Kid	<ol style="list-style-type: none"> 1. No extra money. 2. Mostly soccer. 3. Eat the lunch box. 	<ol style="list-style-type: none"> 1. No dinero extra 2. Mayormente fútbol. 3. Come la lonchera.
Interview 5	Parent	<ol style="list-style-type: none"> 1. From Surco. 2. Private School. 3. 5th grade of Primary School. 4. 4 hrs out of class. 5. Swimming club. 6. It is responsible of preparing the meal at home (fruits, yogurt, bread). Sometimes, lunch is at school. Also it does not provide money to the child. 7. Food. 8. 1.5 hours of PE per week. 9. 0.5 hours of recess per day. 	<ol style="list-style-type: none"> 1. De Surco. 2. Colegio Privado. 3. 5to grado de Primaria. 4. 4 horas por semana fuera de clase. 5. Club de natación. 6. La lonchera se prepara en casa (frutas, yogurt, pan). Algunas veces, la lonchera la consigue en el colegio. Además, no le proveen dinero al menor de edad. 7. Comida. 8. 1.5 horas de clase de Educación Física por semana. 9. 0.5 horas de recreo por día.
	Kid	<ol style="list-style-type: none"> 1. Buys snacks, sweets, but no fruits (inside the school, fruits are not sold). 2. Mostly soccer. 3. 10 minutes for eating the lunch box and 20 minutes to play soccer. 	<ol style="list-style-type: none"> 1. Compra snacks, dulces, no fruta (dentro del colegio no se venden frutas). 2. Mayormente fútbol. 3. 10 minutos son para la lonchera y 20 minutos son para jugar fútbol.

Interview 6	Parent	<ol style="list-style-type: none"> 1. From Surco. 2. Private School. 3. 2nd grade of Primary School. 4. 1 hour out of class per week (usually on Saturdays). 5. Member of Girls Scouts. 6. It is responsible of preparing the meal at home (fruits, water, vanilla cookies, chicken nuggets) 7. Food and sports. 8. 3 hours of PE per week. Also the kid has dancing hours. 9. 0.75 hours of recess per day. 	<ol style="list-style-type: none"> 1. De Surco. 2. Colegio Privado. 3. 2do grado de Primaria. 4. 1 hora fuera de clase por semana. 5. Miembro de las Niñas Scouts. 6. La lonchera se prepara en casa (frutas, agua, galletas de vainilla, nuggets de pollo). 7. Comida y deporte. 8. 3 horas de clase de Educación Física por semana. 9. 0.75 horas de recreo por día.
	Kid	<ol style="list-style-type: none"> 1. snacks, little sweets, <i>tequeños</i>, , popsicles. 2. Volley. 3. Eat the lunch box. Also, dancing and games like cat & mouse catching. 	<ol style="list-style-type: none"> 1. Snacks, dulces pequeños, tequeños y chupetines. 2. Volley. 3. Come la lonchera, pero también baila y juega juegos como el gato y el ratón.
Interview 7	Parent	<ol style="list-style-type: none"> 1. From Lima. 2. Public School. 3. 6th grade of Primary School. 4. 0 hrs out of class. 5. No clubs or teams. 6. It is responsible of preparing the meal at home. Also it does not provide money to the child. 7. Food. 8. 2 hours of PE per week. 9. 50 minutes of recess per day. 	<ol style="list-style-type: none"> 1. De Lima. 2. Colegio Público. 3. 6to grado de Primaria. 4. 0 horas fuera de clase por semana. 5. No clubs o equipos. 6. Prepara la comida en casa. Además, no provee dinero al menor de edad. 7. Comida. 8. 2 horas de clase de Educación Física por semana. 9. 50 minutos de recreo por día.
	Kid	<ol style="list-style-type: none"> 1. No extra money. 2. Not information. 3. Eat the lunch box. 	<ol style="list-style-type: none"> 1. No dinero extra. 2. - sin información.- 3. Come la lonchera.
Interview 8	Parent	<ol style="list-style-type: none"> 1. From Surco. 2. Public School. 3. 1st and 3rd grade of Primary School. 4. 0 hrs out of class. 5. No clubs or teams. 6. It is responsible of preparing the meal at home (chicken, fruits, infusions and teas). Also it does not provide money to the child. 7. Food. 8. 2 hours of PE per week. 9. 0.5 hours of recess per day. 	<ol style="list-style-type: none"> 1. De Surco. 2. Colegio Público. 3. 1er y 3er grado de Primaria. 4. 0 horas fuera de clase por semana. 5. No clubs o equipos. 6. Prepara la comida en casa (pollo, frutas, infusiones y té). No provee dinero al menor de edad. 7. Comida. 8. 2 horas de clase de Educación Física por semana. 9. 0.5 horas de recreo por día.
	Kid	<ol style="list-style-type: none"> 1. No extra money. 2. Not information. 3. 15 minutes to eat the lunch box and 15 minutes to rest and play games such as catching. 	<ol style="list-style-type: none"> 1. No dinero extra. 2. - sin información.- 3. 15 minutos para comer la lonchera y 15 minutos para descansar o jugar a las <i>chapadas</i>.
Interview 9	Parent	<ol style="list-style-type: none"> 1. From Surco. 2. Public School. 3. 2nd grade of Primary School. 4. 2 hours out of class per week. 5. Volleyball. 6. It is responsible of preparing the meal at home (water and a sandwich). Provide extra money for complementary snack. 7. Food and sports. 8. 2 hours of PE per week. 9. 50 minutes of recess per day. 	<ol style="list-style-type: none"> 1. De Surco. 2. Colegio Público. 3. 2do grado de Primaria. 4. 2 horas fuera de clase por semana. 5. Volleyball. 6. Prepara la comida en casa (agua y un sánduche). Además, provee dinero para un snack complementario. 7. Comida y deportes. 8. 2 horas de clase de Educación Física por semana. 9. 50 minutos de recreo por día.
	Kid	<ol style="list-style-type: none"> 1. Not information. 2. Dance and swimming. 3. Eat the lunch box and games. 	<ol style="list-style-type: none"> 1. - sin información.- 2. Baile y natación. 3. Come la lonchera y juega.
Interview 10	Parent	<ol style="list-style-type: none"> 1. From Surco. 2. Public School. 3. 1st grade of Primary School. 4. 2 hrs out of class. 5. No clubs or teams. 6. It is responsible of preparing the meal at home. Also it does not provide money to the child. 7. Food and sports. 8. 2 hours of PE per week. 9. 0.75 hours of recess per day. 	<ol style="list-style-type: none"> 1. De Surco. 2. Colegio Público. 3. 1er grado de Primaria. 4. 2 horas fuera de clase por semana. 5. No clubs o equipos. 6. Prepara la comida en casa. Además, no provee dinero al menor de edad. 7. Comida y deportes. 8. 2 horas de clase de Educación Física por semana. 9. 0.75 horas de recreo por día.
	Kid	<ol style="list-style-type: none"> 1. No extra money. 2. Running and volley. 3. Eat the lunch box and play games or volley. 	<ol style="list-style-type: none"> 1. No dinero extra. 2. Correr y jugar volley. 3. Come la lonchera y juega, por ejemplo volley.

Appendix L

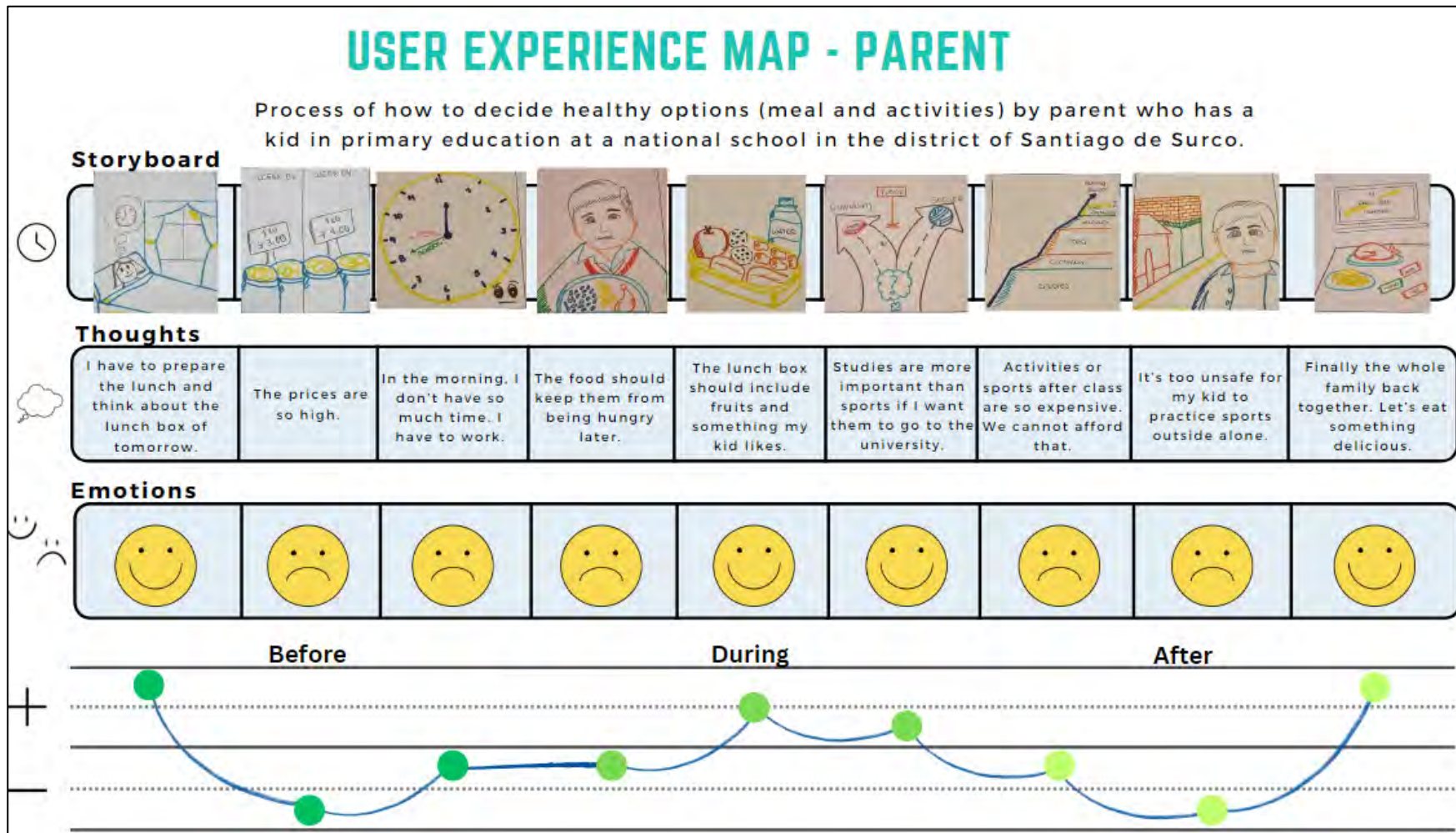
Figure 7
User Experience Map - Child



Appendix M

Figure 8







User Experience Map - Parent



Appendix N

Table 8
Brainstorming Solution – 6x6 Canvas

OBJECTIVE		NEEDS			
To generate more healthy food options, sports activities and access to community infrastructure that are affordable and desirable for both children and parents in order to reduce child obesity.		<ol style="list-style-type: none"> 1. The parent needs to improve its daily diet with the same budget. 2. The parent needs to provide more sport activities to the children. 3. The parent needs to improve the healthy cooking style. 4. The child needs to increase the hours of physical activity. 5. The child needs to enhance knowledge about healthy food. 6. The child needs access to healthy options during school hours. 			
1	2	3	4	5	6
How can we get the parent to buy more healthy food with the same budget?	How can we help the parent to enroll the kids in more sport activities?	How can we make the parent to learn new healthy cooking styles?	How can we help the child to increase the hours of physical activity?	How can we get the child to learn about healthy food and its benefits?	How can we make children get access to healthy food options during school?
Provide coupons for discounts	Encourage sports that cost little for gears (running, football).	Offering monthly diet options with affordable and seasonal ingredients.	Organize after school sports classes on campus	Professionals hosting talks at schools.	Setting up fruit stand and juice bar in school and offer at least 50% healthy food options
Donations	More visibility of sports that don't require extra equipment (walking, running).	Having professional consultant to guide them	increase hours of PE in school	School organizing cooking class.	School offering discount/subsidy for healthy food
Supermarkets offer healthy and discounted leftover baskets at the end of the day	Organize sport class in community center (more trustworthy).	Education on calories	Organize community sports day	Include knowledge into class material.	School provide at least one meal that cover the nutriment needs
Self generated food in the program	Free activities.	Indicator(traffic-light)app for food alternatives	supervised play sessions at community center - supervision with volunteers and old people team	Have healthy food day all school (1x/2x a month). Invite external people.	School banning unhealthy food options
Crow own food in community gardens	Local volunteers leading sports sessions.	Reward system for improving cooking styles	Show the impact they can generate by participation	Teaching them with a game theme (gamefication).	Having old people cook for school
Co-creating diet options with nutritionists Choosing ingredients with greater value (chicken for portein)	Explaining the benefits of sport activities (impact in their health).	Community nights for healthy food talks	try-out options in a summer program or regular basis - free or at least minimal costs - each club in Surco organizes a day (to have 4 days per month covered)	App for kids. Playful to learn about healthy food and home exercise.	Provide daily lunchbox collabing with company with a lower price
Go to local market instead of supermarkets	Provide different options based on the financial resources. Discounts if the parent volunteers to help.	Collab with company that offers healthy recipe with the ingredients	Provide more face-2-face activities (dancing, gardening, competitions)	App home exercise. Rewards from points collecting, so they can be used for healthy meals.	

OBJECTIVE		NEEDS					
To generate more healthy food options, sports activities and access to community infrastructure that are affordable and desirable for both children and parents in order to reduce child obesity.		1. The parent needs to improve its daily diet with the same budget.	2. The parent needs to provide more sport activities to the children.	3. The parent needs to improve the healthy cooking style.	4. The child needs to increase the hours of physical activity.	5. The child needs to enhance knowledge about healthy food.	6. The child needs access to healthy options during school hours.
1	2	3	4	5	6		
How can we get the parent to buy more healthy food with the same budget?	How can we help the parent to enroll the kids in more sport activities?	How can we make the parent to learn new healthy cooking style?	How can we help the child to increase the hours of physical activity?	How can we get the child to learn about healthy food and its benefits?	How can we make children get access to healthy food options during school?		
Buy a bigger portion for the whole family (wholesale)	Long-term membership discounts.	Offer cooking class with healthy ingredients.	Instructions to home exercises	Indicator(traffic-light) to raise understanding of healthy and unhealthy food			
	Practice recreational activities as family activity.	Offering free healthy meal for people to try.	New and non conventional activities - that's they do not do at school				
			Family activities outside with low-cost gear (running, etc				
							
Growing own food in community gardens, then provide diet options by health professionals. Extra food could be sold to generate income and not impacting the budget of the parent.	Provide more option through the local community center - offering sports classes (more trustworthy) in collaboration with e.g. local gym that wants to have social impact providing free classes and organizing family activity days with low cost gear	Providing monthly diet options to cook at home with affordable and seasonal ingredients in the community nights with a healthy theme.	Schools and community centers offering supervised sports sessions and offer a program that is organized by collab clubs/gyms to try-out a variety of sports. Keeps them engaged	Health day once a month that includes for example cooking classes, having professionals for talks to teach them in a playful way (traffic light indicator) or new ways of home exercises	School setting up fruit stand and juice bar that offers discounted prices for students		

Appendix O

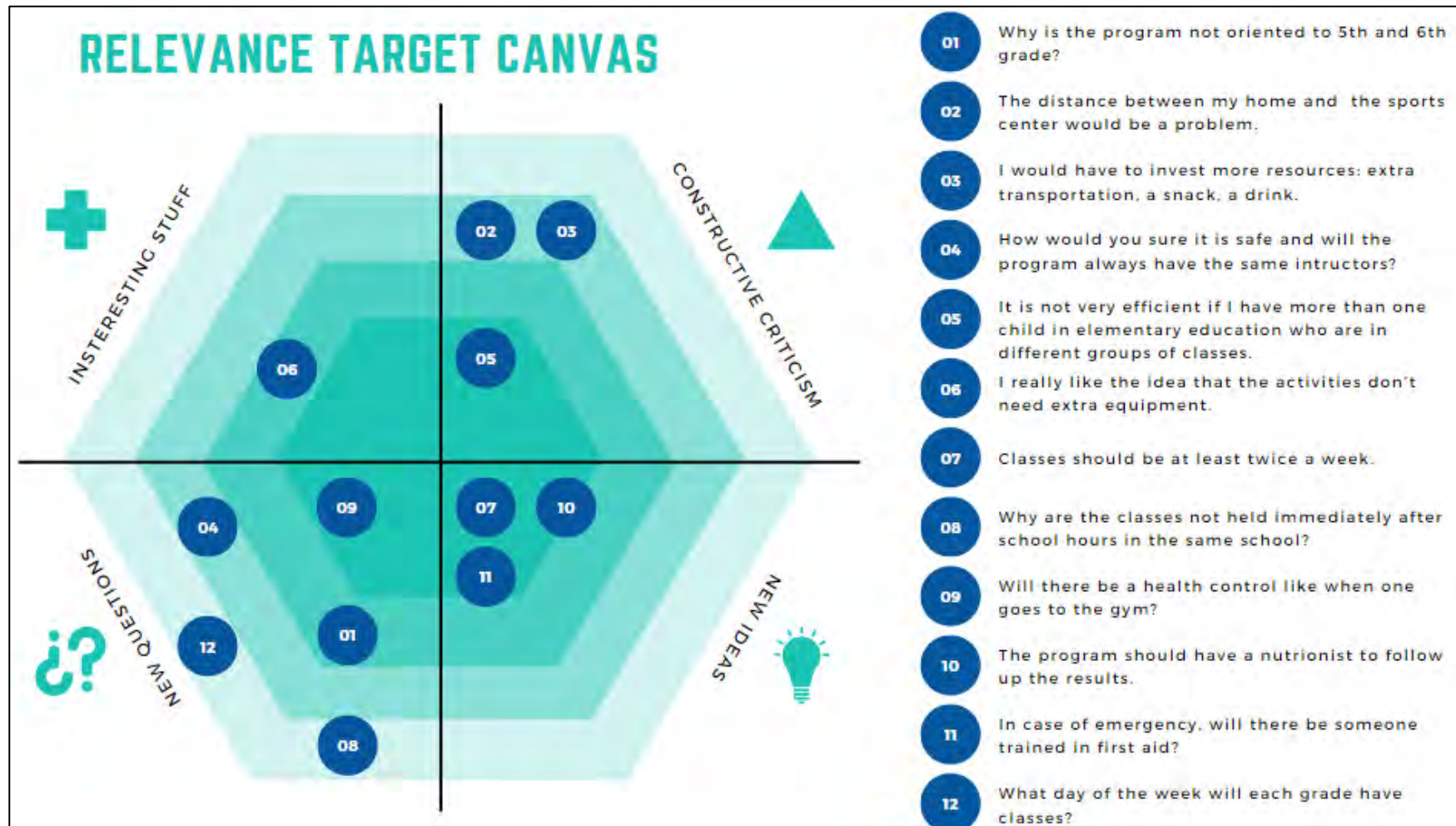
Table 9

Quick Wins Matrix

QUICK WINS MATRIX						
PROPOSED ACTIONS	IMPLEMENTATION COMPLEXITY			IMPACT OF THE ACTION		
	LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
A1: Growing own food in community gardens, then provide diet options by health professionals. Extra food could be sold to generate income and not impacting the budget of the parent.		X			X	
A2: Provide more option through the local community center - offering sports classes (more trustworthy) in collaboration with e.g. local gym that wants to have social impact providing free classes and organizing family activity days with low cost gear.		X				X
A3: Providing monthly diet options to cook at home with affordable and seasonal ingredients in the community nights with a healthy theme.	X				X	
A4: Schools and community centers offering supervised sports sessions and offer a program that is organized by collab clubs/gyms to try-out a variety of sports. Keeps them engaged.			X			X
A5: Health day once a month that includes for example cooking classes, having professionals for talks to teach them in a playful way (traffic light indicator) or new ways of home exercises.		X				X
A6: School setting up fruit stand and juice bar that offers discounted prices for students			X			X
		COMPLEXITY (COST \$/)		IMPACT (PEOPLE)		
	LOW	LESS THAN 1,000		JUST THE KID		
	MEDIUM	1,000 - 2,000		KID AND FAMILY		
	HIGH	MORE THAN 2,000		COMMUNITY		

Appendix P

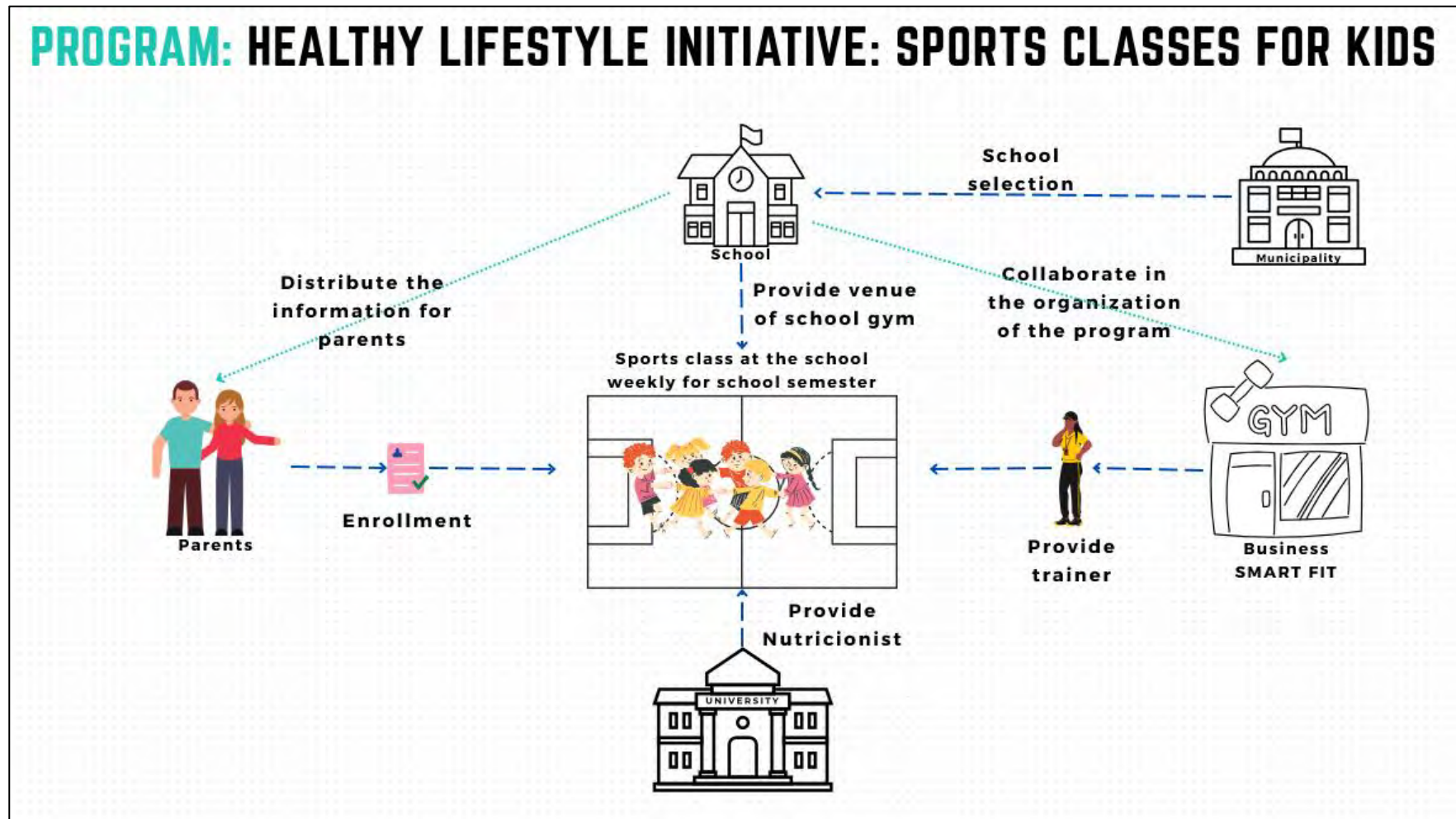
Figure 9
Relevance Target Canvas



Appendix Q

Figure 10

Program: Healthy Lifestyle Initiative – Sports Classes for Kids



Appendix R

Figure 11
Characteristics of the program



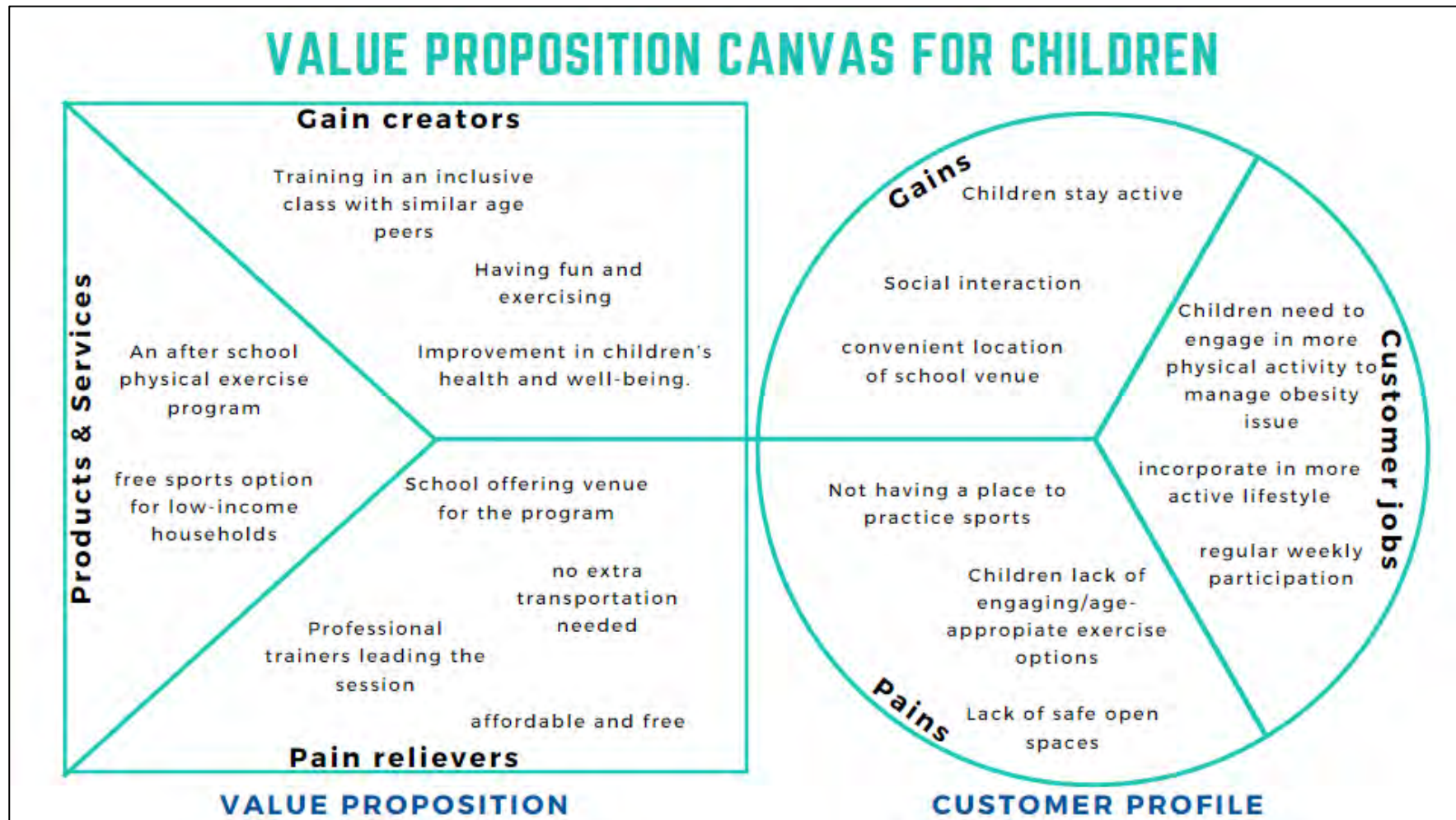
Appendix S

Figure 12
Flyer of the program



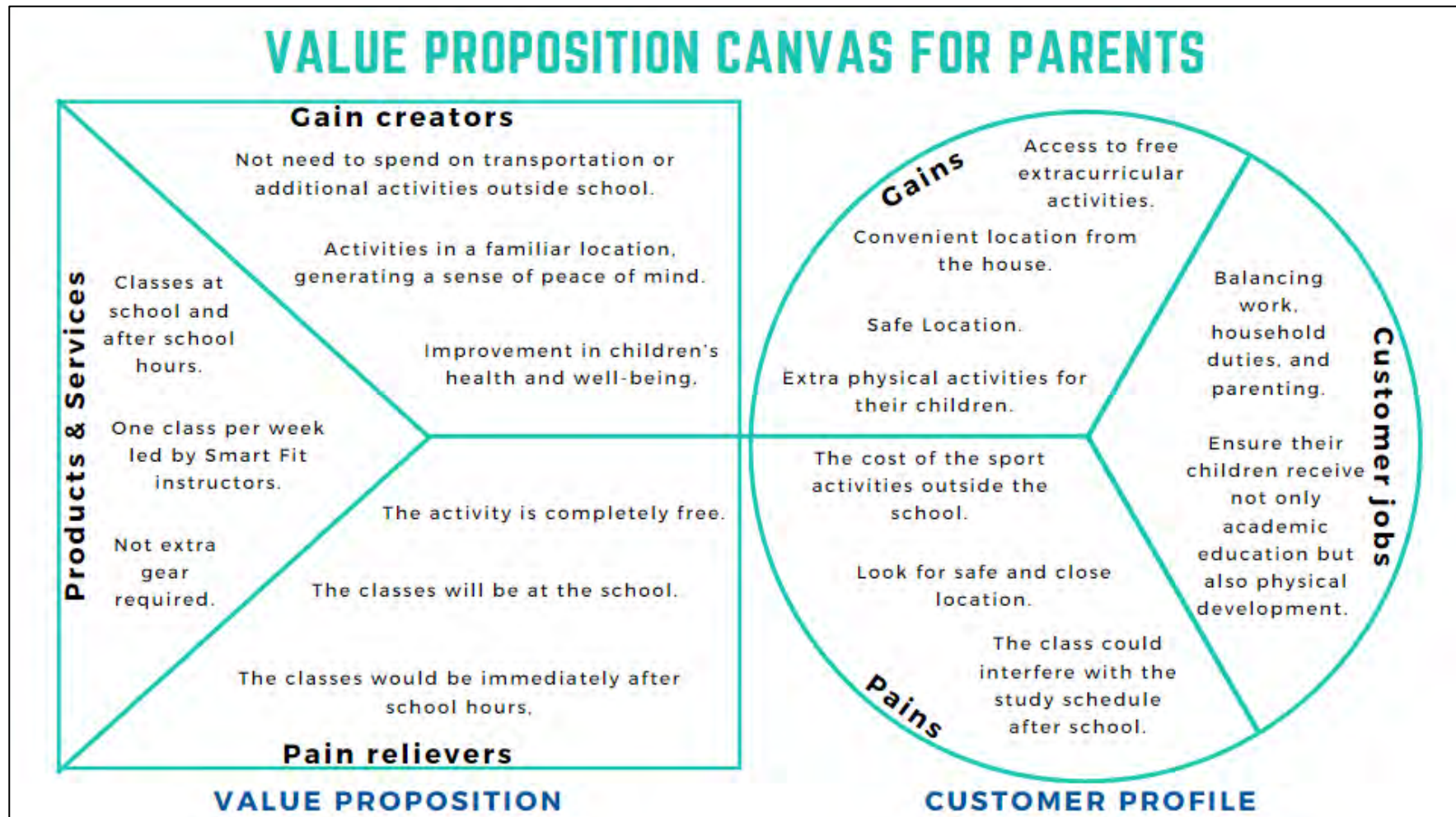
Appendix T

Figure 13
Value Proposition Canvas for Children



Appendix U

Figure 14
Value Proposition Canvas for Parents



Appendix V

Figure 15
“B” Canvas Business Model

