

Healthy School Canteen Policies, Programs, and Best Practices in Southeast Asia



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Cambodia
Indonesia
Malaysia
Myanmar
The Philippines

Editors:
Jesus C. Fernandez
Dwi Nastiti Iswarawanti



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Jalan Raya Utan Kayu No. 1A RT 001 RW 008

Kel. Utan Kayu Utara, Kec. Matraman

Jakarta Timur 13120

Phone. 021-22116225, Fax. 021-22116465

Website. www.seameo-recfon.org

Email. information@seameo-recfon.org

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PRODUCTION TEAM

Advisers	Prof. Dr. Muchtaruddin Mansyur Dr. Jesus C. Fernandez Dr. Agus Haryanto
Coordinator	Dr. Dwi Nastiti Iswarawanti
Collaborating Institutions and Team Members	
SEAMEO Regional Centre for Vocational and Technical Education and Training for Brunei Darussalam	Dr. Pg Hj Mohamad Sufri bin Pg Ali (Lead Person) Dr. Siti Rohaiza (Assistant Lead Person) Dr. Paryono (Writer)
SEAMEO Regional Centre for Technical Education Development for Cambodia	Dr. Ai Songheang (Lead Person and Writer) Mr. Khat Promosochetra (Assistant Lead Person) Mr. Suong Saruon (Assistant Lead Person)
SEAMEO Regional Centre for Food and Nutrition for Indonesia	Dr. Dwi Nastiti Iswarawanti (Lead Person) Dr. Judhiastuty Februhartanty (Assistant Lead Person) Dr. Gusnedi (Writer) Ms. Nurulita Aida Rahmasari, M.Nut (Writer)
SEAMEO Regional Centre for Special Education Needs for Malaysia	Mr. Mohd. Zulkarnain Abdul Wahab (Lead Person) Mr. Mohd. Anis Abdul Razak (Assistant Lead Person) Dr. Chen Seong Ting (Writer)
SEAMEO Regional Centre for History and Tradition for Myanmar	Dr. Daw Thuzar Aung (Lead Person) Ms. Thet Oo Khine (Writer)
SEAMEO Regional Centre for Graduate Study and Research in Agriculture for the Philippines	Ms. Carmen Nyhria G. Rogel (Lead Person) Dr. Pedcris M. Orencio (Assistant Lead Person) Dr. Maria Theresa Talavera (Writer)
Administrative Support	Ms. Cahya Ayu Agustin, M.Nut
Reviewers	Dr. Jesus C. Fernandez Dr. Dwi Nastiti Iswarawanti Dr. Luh Ade Wiradnyani Dr. Judhiastuty Februhartanty Mrs. Evi Ermayani, M.Nut
Editors	Dr. Jesus C. Fernandez Dr. Dwi Nastiti Iswarawanti
Language Editor (for Cambodia, Indonesia, Myanmar chapters)	Mrs. Lavinia Disa Winona Araminta, M.Sc
Proofreaders	Ms. Cahya Ayu Agustin, M.Nut Ms. Rifa Fauziyyah, B.PH
Cover and Lay-out Designer	Mr. Riocco Rahman

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Brunei Darussalam

1. SEAMEO Regional Centre for Vocational and Technical Education and Training (VOTECH), Brunei Darussalam
2. Ministry of Education, Brunei Darussalam
3. Ministry of Health, Brunei Darussalam
4. PAPHRSB Institute of Health Sciences, Universiti Brunei Darussalam
5. Sekolah Rendah Tungku, Kluster 1, Brunei Muara
6. Sekolah Rendah Puni, Temburong
7. Sekolah Rendah Rataie Mukim Bokok Temburong
8. Sekolah Rendah Perpindahan Kampong Bukit Beruang II, Tutong II

Cambodia

1. SEAMEO Regional Centre for Technical Education Development (TED), Cambodia
2. The School Health Department of the Ministry of Education, Youth, and Sport, Cambodia
3. Puok General and Technical High School
4. Watbo Primary School
5. Private General and Technical High School of Saint Francois
6. General and Technical High School of Samdech Preah Bat Preah Borumneat Norodom Sihanoni
7. Trapaing Arak Primary School
8. Don Bosco General and Technical Private High School Poi Pet
9. Chaktomuk Junior High School
10. Chatkomuk Primary School
11. Home of English International School
12. The Westline School

Indonesia

1. SEAMEO Regional Centre for Food and Nutrition (RECFON), Republic of Indonesia
2. Directorate General of Early Childhood Education, Primary Education, and Secondary Education, Ministry of Education, Culture, Research and Technology, Republic of Indonesia
3. Directorate of Public Health Nutrition, Directorate General of Public Health, Ministry of Health, Republic of Indonesia
4. Directorate of Family Health, Directorate General of Public Health, Ministry of Health, Republic of Indonesia
5. Directorate of Curriculum, Facilities, Institutional and Student Affairs of Madrasah, Directorate General of Islamic Education, Ministry of Religion Affairs, Republic of Indonesia

6. Directorate of Synchronization of Regional Government Affairs IV, Directorate General of Regional Development, Ministry of Home Affairs, Republic of Indonesia
7. Directorate of Community and Industries Empowerment, National Agency of Drug and Food Control, Republic of Indonesia
8. Sekolah Menengah Kejuruan Wikrama Bogor
9. Sekolah Menengah Atas Negeri 1 Gerung, Lombok Barat
10. Madrasah Tsanawiyah Negeri 1 Makassar
11. Sekolah Dasar Muhammadiyah Condong Catur, Yogyakarta
12. Sekolah Menengah Pertama Negeri 26 Surabaya

Malaysia

1. SEAMEO Regional Centre for Special Educational Needs (SEN), Malaysia
2. Ministry of Education, Malaysia
3. Sekolah Menengah Kebangsaan Malim, Melaka
4. Sekolah Kebangsaan Pauh Jaya, Pulau Pinang
5. Sekolah Menengah Kebangsaan Baru Miri, Sarawak
6. Sekolah Kebangsaan Bandar Tasik Kesuma, Selangor
7. Sekolah Menengah Pendidikan Khas Vokasional Indahpura, Johor
8. Sekolah Menengah Kebangsaan Tunku Abdul Rahman, Negeri Sembilan (Pilot Test)

Myanmar

1. SEAMEO Regional Centre for History and Tradition (CHAT), Myanmar
2. Ministry of Education, Myanmar
3. BEHS (2) Sangyoung
4. BEHS (2) Latha
5. BEHS (2) Baha

The Philippines

1. SEAMEO Regional Centre for Graduate Study and Research in Agriculture (SEARCA), Republic of The Philippines
2. Department of Education, Republic of The Philippines
3. Committee on Education, Culture, Arts, and Religion Sangguniang Bayan, Local Government of Busuanga, Palawan
4. Calawit Elementary School
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8. Crisanto Guysayko Memorial Elementary School

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PREFACE

Schools are ideal settings to deliver health and nutrition education and promote good dietary practices among school children to help address malnutrition problems. Schools play a critical role in creating a healthy food environment for their students and other school community members. Having a healthy school canteen is one important component towards this end. However, schools in Southeast Asia vary in the way they integrate health and nutrition education into their activities, particularly on how they optimize their respective school canteens for such purposes. This could be attributed to several factors, which include the kinds of curricula and national programs and policies on school health and nutrition applicable in the region. These premises are among the major reasons why we published this book; it is meant to serve as reference material for school administrators, teachers, and students in Southeast Asia. This book is also aimed at recognizing and promoting the efforts of selected schools and governments featured in advocating school health and nutrition, such as the development of a healthy school canteen.

This book is the result of the collaborative efforts among six SEAMEO Centres which began in October 2020 and were completed in December 2021. Our Centre, the Regional Centre for Food and Nutrition (RECFON) based in Indonesia, was privileged to coordinate the publication of this book. The other five SEAMEO Centres include the Regional Centre for History and Tradition (CHAT) in Myanmar, Regional Centre for Special Education Needs (SEN) in Malaysia, Regional Centre for Graduate Study and Research in Agriculture (SEARCA) in the Philippines, Regional Centre for Technical Education Development (TED) in Cambodia, and Regional Centre for Vocational and Technical Education and Training (VOCTECH) in Brunei Darussalam. The publication was made possible through the SEAMEO Inter-Centre Collaborative Grants Program and counterpart funding from our Centre.

This book contains a brief overview of the geographic and socio-demographic profile, education system, nutritional status and eating habits among school-aged children and adolescents, policies and programs on school health and healthy school canteens, examples of healthy school canteen best practices, lessons learned and recommendations of six Southeast Asian countries where the collaborating SEAMEO Centers are located. Our project team members gathered information on these sections through semi-structured interviews and focused group discussions with key informants from 24 selected schools and relevant national government institutions engaged in school health and nutrition in the abovementioned countries.

We hope that this book would generate interest and commitment from other schools in the region to also aim for operating a healthy school canteen to provide a healthy food environment for their respective school communities by drawing inspiration from the best practices featured here.



Muchtaruddin Mansyur, MD, PhD
Director, SEAMEO RECFON

INTRODUCTION

Providing nutritious, safe, and balanced food in the diet of children is important to enable them to achieve optimal growth and better learning ability. Studies have shown that good health and nutritional status of children depends on the quality and adequacy of their daily food intake. The Global Nutrition Report, however, revealed that various forms of malnutrition remain prevalent among school-aged children in Southeast Asian countries due to low quality diet practices, such as skipping breakfast, having imbalanced nutrition intake, and frequently consuming foods high in salt, sugar, and fat.

School-aged children would usually spend 4-8 hours of their life at school. Given this length of time spent and the intensive activities that children do at school, they would need access to foods that could adequately provide the energy and nutrients they would require to last a day. At their age, school children start selecting foods they want to eat, especially outside of their home, which is influenced by either their exposure to mass media, peers, the school community at large, or their purchasing capacity. Thus, providing the proper knowledge and skills for school children to acquire good dietary practices is crucial. Studies have also shown that schools are ideal settings to deliver information about nutrition and promote good dietary practices among students. As an established system, schools provide an efficient way to reach a significant number of children on a regular basis in a more structured manner.

The opportunities for school children to learn about balanced nutrition, food safety, and its importance to their overall growth and development through the school system vary from one country to another in Southeast Asia. The difference lies on the existing national policies and programs, school curricula, available human resources, knowledge materials, and the approaches through which nutrition concepts and principles are integrated into classroom subjects and/or extracurricular activities.

In 2016, the SEAMEO Regional Centre for Food and Nutrition initiated a flagship program called Nutrition Goes to School (NGTS) to drive home the message of the crucial role that a school plays in building the character of students to learn good nutritional practices towards healthy living throughout their lifetime. As a school-based multisectoral program, the NGTS program generally aims to improve students' learning outcomes and active participation in school activities by acquiring proper nutrition. The program was expected to help develop AWESOME (i.e., Active, Well-nourished and Smart of ME) school children.

One core component of the NGTS program is Healthy School Canteens. SEAMEO RECFON believes that a healthy school canteen can significantly contribute to developing AWESOME school children by not only being the source of healthy foods and drinks but also as an effective medium for building their character and acquiring proper nutrition habits and other relevant life skills. To advocate this component, the Centre published "Practical Guidelines for Developing a Healthy School Canteen" in 2018, which elaborates on four major pillars and 23 indicators. The four major pillars include: (a) commitment and management, (b) infrastructure; (c) human resources; and, (d) food safety and quality. These pillars were derived from policies and guidelines developed by Indonesia's Ministries of

Health and Education as well as the Food and Drug Administration on food safety, hygiene and sanitation, and health and nutrition of the general public, including school children. The publication can be accessed at SEAMEO RECFON's website (www.seameo-recfon.org).

SEAMEO RECFON further believes that school-based health and nutrition promotion programs and policies exist at different educational levels in Southeast Asia to varying degrees of implementation. Such programs and policies involve the operation of healthy school canteens, which, in the process, may have generated some best practices over the years that are worth sharing and could be replicated in other countries depending on the existing contexts. However, not much documentation on these best practices has been published to aid the teaching and learning process of school teachers and students. In this context, SEAMEO RECFON proposed an Inter-Centre Collaboration (ICC) project during the SEAMEO Directors Meeting in July 2020 on compiling policies, programs, and best practices on healthy school canteen implementation in the region as a reference book. The SEAMEO Executive Council eventually approved the project proposal, which was implemented from October 2020 to December 2021.

This project was generally aimed at facilitating the teaching-learning process of school teachers and students in Southeast Asia on healthy school canteens through a compilation of best practices and effective policies and programs from selected countries. Specifically, the project had the following objectives:

1. To discover and compile sociocultural uniqueness among Southeast Asian countries with regard to their best practices, programs, and policies on healthy school canteen implementation, including the foods that they provide to their students and other members of their school community;
2. To promote the efforts of selected schools and governments in Southeast Asia in advocating best practices, policies, and programs on healthy school canteen implementation for the general welfare of their students and other members of their school community; and,
3. To generate interest and commitment from other schools in Southeast Asia to improve their existing school canteens to become healthy school canteens and serve as a medium of instruction to their students and members of their school community to acquire healthy eating habits by drawing inspiration from the best practices of the selected schools featured in the book.

To achieve the abovementioned objectives as an ICC Project, SEAMEO RECFON collaborated with five other SEAMEO Centres. The five SEAMEO Centres and the countries they represent include the Regional Centre for History and Tradition (CHAT) for Myanmar, Regional Centre for Special Education Needs (SEN) for Malaysia, Regional Centre for Graduate Study and Research in Agriculture (SEARCA) for the Philippines, Regional Centre for Technical Education Development (TED) for Cambodia, and Regional Centre

for Vocational and Technical Education and Training (VOCTECH) for Brunei Darussalam. SEAMEO RECFON itself represents Indonesia.

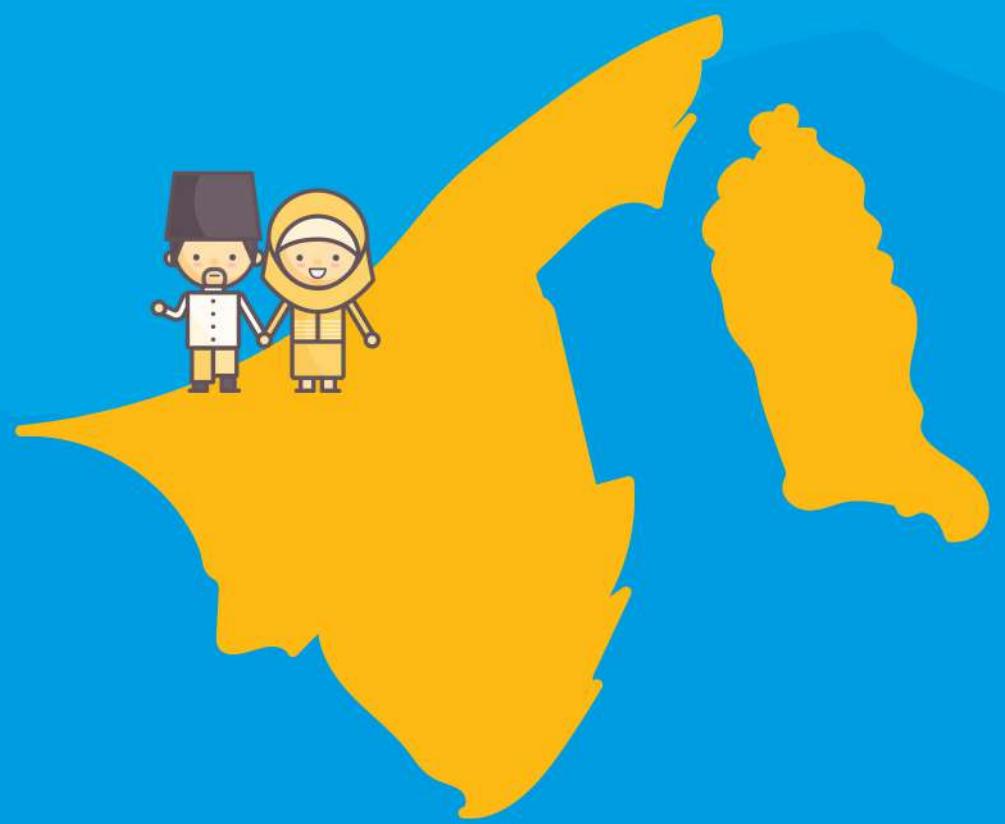
A total of 24 schools implementing healthy school canteens are featured in this book. These schools represent different education levels and were selected according to various criteria agreed upon by the SEAMEO Centres in coordination with relevant ministries of the abovementioned countries that have direct relationship with schools.

The book contains a brief overview of the geographic and socio-demographic profile, education system, malnutrition and eating habits among school-aged children and adolescents, policies and programs on school health and healthy school canteens, examples of healthy school canteen best practices, lessons learned and recommendations of each country. The best practices included in this book are based on the opinions of the selected schools given their existing situations and may not necessarily be in line with the universal set of criteria that constitute what a best practice is. Nevertheless, these best practices enable the schools to operate their school canteen towards ensuring the health and nutrition of their respective school communities. Furthermore, these best practices can provide valuable insights on how healthy school canteens are being implemented in the region.

Healthy School Canteen Policies, Programs, and Best Practices in Southeast Asia



Brunei Darussalam
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Brunei Darussalam

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I

Geographic and Sociodemographic Information

Brunei Darussalam (hereinafter referred to as Brunei) is located on the northwest coast of the Borneo Island in Southeast Asia. It shares land borders with Malaysia (Sarawak) while its sea borders face the South China Sea. The country has a total land area of 5,765 square kilometers, with 161 kilometers of its coastline along the South China Sea.

Brunei is divided into four main districts, namely: Brunei Muara, Tutong, Belait, and Temburong Districts. The capital city of Brunei is Bandar Seri Begawan (BSB). Brunei has a tropical equatorial climate, making it hot, humid and wet throughout the year.

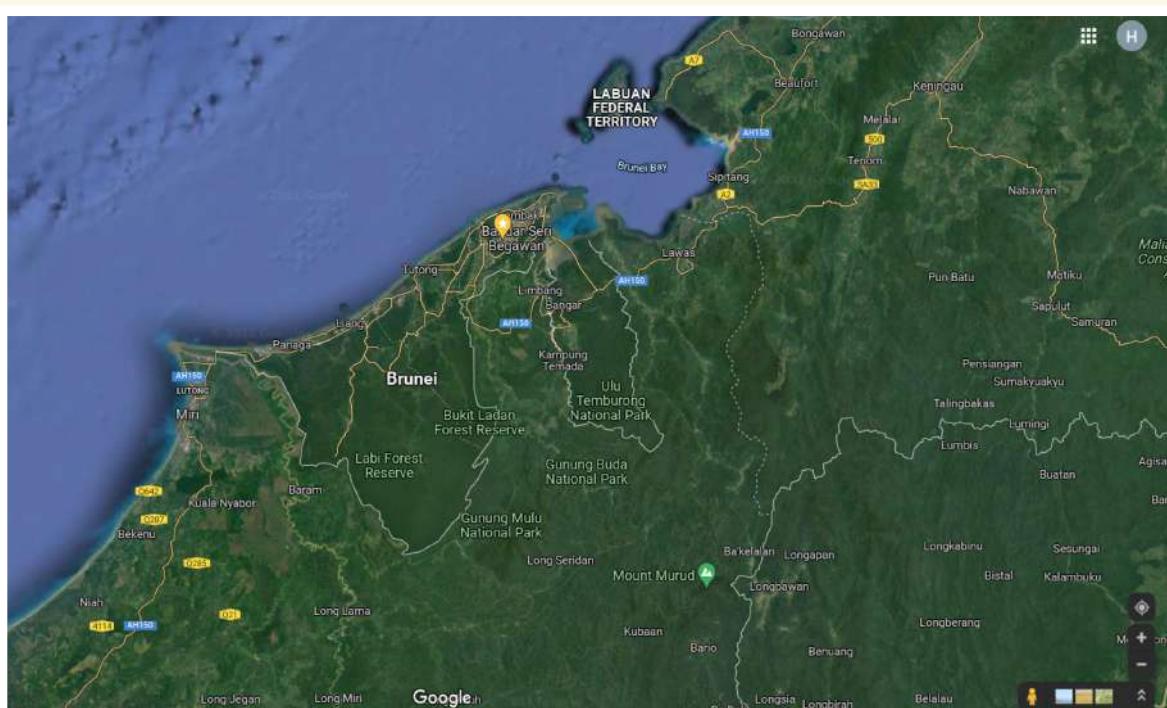


Figure 1. The map of Brunei Darussalam (Source: Google Map).

In 2021, Brunei had an estimated population of 429,999 consisting of 52.6 percent males and 47.4 percent females (Department of Economic Planning and Statistics, 2021). Based on age categories, 16.3 percent of the total population (70,036 persons) were below 12 years old, 8.8 percent (37,677 persons) were between 12 to 17 years old, 64.9 percent (278,985 persons) were between 18 to 59 years old, and 10.1 percent (43,301 persons) were 60 years old and over. Majority of the population (82.2%) is comprised of Brunei Citizens and Permanent Residents, while non-locals account for 17.8 percent. In 2020, the annual population growth rate decreased by 1.3 percent, while increases were recorded in 2019 by 3.9 percent and in 2018 by 3.0 percent. The decline was due to the decrease in Temporary Residents by 10.9 percent from 94,200 persons in 2019 to 83,900 persons in 2020. This was due to the travel restrictions during the COVID-19 pandemic, specifically on the entry of foreigners to Brunei.

From 2016 to 2020, the percentage of the population aged 15-64 years constantly comprised more than 70 percent of the total population, and the median age continued to increase from 29.5 to 32.3 years over the same period. The life expectancy at birth for males has leveled at around 76 years since 2016. The life expectancy at birth for females has remained consistent at 78.7 years in 2016 and 80.4 years in the 2020 estimate (CIA World Factbook, 2020).

There are seven ethnic groups in Brunei, namely: Malay, Kedayan, Belait, Tutong, Bisaya, Murut, and Dusun. The two largest ethnic groups are the Malays (67%) and the Chinese (15%). Indigenous Bruneians make up 6 percent while Europeans and Filipinos comprise 12 percent of the total population. The official religion in the country is Islam (about 66%). However, other religions such as Buddhism and Hinduism are also practiced (Department of Economic Planning and Statistics, 2019). Malay is Brunei's official language. English is also widely used in schools and government offices.

In terms of Brunei's public food culture, culinary influences are from the neighboring countries, Malaysia, Singapore, and Indonesia, as evidenced in most restaurant menus (Alexander, 2006; Richmond 2010). There is also an increasing number of the western food chain or fast-food restaurants in Brunei (Oxford Business Group, 2014). Halal cooking is the norm in almost all public eateries unless stated otherwise within the restaurant (Oxford Business Group, 2014). Bruneian families like to eat meals outside the home (Richmond, 2010). It is a common practice for Brunei households to prepare and consume foods that originated from Malaysia, Singapore, Chinese, and Indonesia (Alexander, 2006; Richmond 2010). The main staple food in Brunei is rice, which is usually consumed during lunch and dinner. During special occasions such as birthday celebrations, work promotions, engagement events, and house-moving, food and drinks are served as a thank-you gesture. Nowadays, food and drinks are also easily accessible as most restaurants offer delivery and takeaways.

His Majesty Sultan Haji Hassanal Bolkiah Mu'izzaddin Waddaulah, The Sultan and Yang Di-Pertuan of Brunei Darussalam is the Head of State and Head of Government of Brunei Darussalam. His Majesty who is the 29th Sultan of Brunei is the Prime Minister, Minister of Defense, and Minister of Finance. His Majesty is assisted by five constitutional bodies, namely: the Council of Succession, the Council of Ministers, the Privy Council, the Religious Council,¹ and the Legislative Council (Information Department, Brunei Darussalam 2021).

From 1888 to 1983, Brunei Darussalam was a British protectorate state. Brunei achieved its full sovereignty on 1 January 1984. The 1959 Constitution of Brunei Darussalam is the basis of Brunei governance (Information Department, Brunei Darussalam 2021). Brunei Darussalam is a member of several regional and international organizations including the Association of Southeast Asian Nations (ASEAN), The United Nations (UN), Asia-Pacific Economic Cooperation (APEC), The Commonwealth, International Monetary Fund (IMF), Organization of the Islamic Conference (OIC), World Trade Organization (WTO), Non-Aligned Movement (NAM) and so on (Information Department, Brunei Darussalam, 2021).

Brunei has a small but wealthy economy. It comprises a mixture of foreign and domestic entrepreneurship. The economy is supported mainly by crude oil and natural gas exports, with revenues from the petroleum sector accounting for nearly over half of Brunei's Gross Domestic Product (GDP). The country's GDP per capita was recorded at 32,402.37 US dollars in 2020. GDP per capita, PPP (current international \$) was USD 65,661 in 2020 (The World Bank, 2021). The World Bank classifies Brunei Darussalam as a high-income country. In 2019, the unemployment rate was 6.8 percent.

Due to the outbreak of COVID19 in 2020, some sectors, including the agriculture and agri-food sectors, were affected. However, despite these challenges, Brunei was able to sustain production. The gross output value of the agriculture and agri-food industry for 2016 to 2020 increased up to 14.1 percent (i.e., an increase from B\$412.74 million in 2016 to B\$470.86 million in 2020). The livestock industry contributed significantly (57%), followed by the agri-food industry (32%) and the crop industry (11%) (Agriculture Agrifoodfood Department, Brunei Darussalam 2020).

The Human Capital Index of Brunei Darussalam in 2019 was 0.838 which puts the country in the very high human development category positioning it at 47 out of 189 countries and territories (UNDP, 2020). Between 1990 and 2019, Brunei's HDI value increased from 0.767 to an increase of 9.3 percent. The Universal Health Coverage (UHC) index for Brunei was 81 in 2017, which places the country in the 23rd world ranking.

Brunei's Ministry of Health (MoH) plays a leading role to work proactively with the key stakeholders: the Ministry of Education (MoE), Ministry of Religious Affairs (MoRA), and Ministry of Culture, Youth and Sports (MoCYS) to develop policies and guidelines to promote healthy lives among children and youths supporting the World Health Organization (WHO) initiatives and achieving the objectives outlined in the United Nations Sustainable Development Goals. Some actions and initiatives outlined are identified and incorporated into the MoH Strategic Plan 2019-2023. The policies and guidelines produced by the MoH are elaborated in the succeeding section.

The MoH has five overarching strategies with regard to children and youth health namely: (1) Nutrition, (2) Physical Activity, (3) Mental Health, (4) Tobacco Control, and (5) Reproductive Health. The one related to Healthy School Canteen is covered under School Health Services, in which several programs have been implemented, such as (1) various health screenings, (2) medical examination, (3) Health Talk, (4) Vaccination programs, (5) and school visits (Ministry of Health, 2021).

The MoE has developed the Standard Operating Procedures for food handling in schools in terms of school food services. The MoE sets criteria for a healthy school canteen and grading assessment. The grading assessment for canteen/kiosk operators is an initiative that focuses on creating a safer and healthier environment for the children when eating from the school canteen.

Overview of Educational System

The MoE provides holistic education to achieve the fullest potential for all by giving quality education to Bruneian children. To meet future challenges, the Ministry has developed a vision of “Quality education towards a developed, peaceful and prosperous nation”. This vision is to realize the nation’s aspirations and produce citizens who are committed and capable of contributing towards the continued growth, stability, and prosperity of the country (Ministry of Education, 2021).

The MoE has a policy of providing a minimum of 12 years of education. This comprises seven years in primary education (inclusive of 1 year in preschool) and five years in secondary education. The next education level is based on the students’ results where they can undergo two years in Sixth Forms or other pathways such as technical or vocational courses/education. In view of the importance of education in the life of an individual, education in Brunei is made compulsory for every child for at least nine years, from the age of six years. The literacy rate of the population aged nine years and above is 96.5 percent (Department of Economic Planning and Statistics, 2019).

Formal schooling begins at the preschool level at the age of five years. From the age of six years onwards, students follow six years of primary education, after which they proceed to the secondary level. After completing secondary education, students may continue to post-secondary education either to pre-university education, technical and vocational education, including Nursing Education, or specialized education. For those who would like to further their education, they can proceed to tertiary education, i.e., university level for undergraduate degree, then Master and Doctorate degrees.

Brunei’s education system places a strong emphasis on Islamic Religious Knowledge, Nationhood Education (MIB), Literacy, Numeracy, Science, Physical Education, Social Studies, and Technology Arts and Culture. Since the implementation of SPN21, *Sistem Pendidikan Negara Abad 21* [21st Century National Education System] which was launched in 2009, all subjects are taught in English except for *Bahasa Melayu*, Islamic Religious Knowledge, and *Melayu Islam Beraja*. The SPN21 curriculum ensures that within broad learning areas, learners will develop knowledge and understanding, essential skills with the attitudes and values to ensure holistic development within the context of the 21st century which will provide the basis for lifelong learning and employability in a progressive and challenging world.

For students who have special educational needs, the curriculum is modified and/or adapted according to their ability and needs based on the Individualized Education Plan (IEP) and Remedial Education Plan (REP). Under the Special Education Unit of the MoE, the Model Inclusive Schools Project, or also known as Centers of Excellence Services for Children, was introduced and implemented in selected primary and secondary schools. This project aims to provide examples or model inclusive schools for special needs students and to increase access to learning.

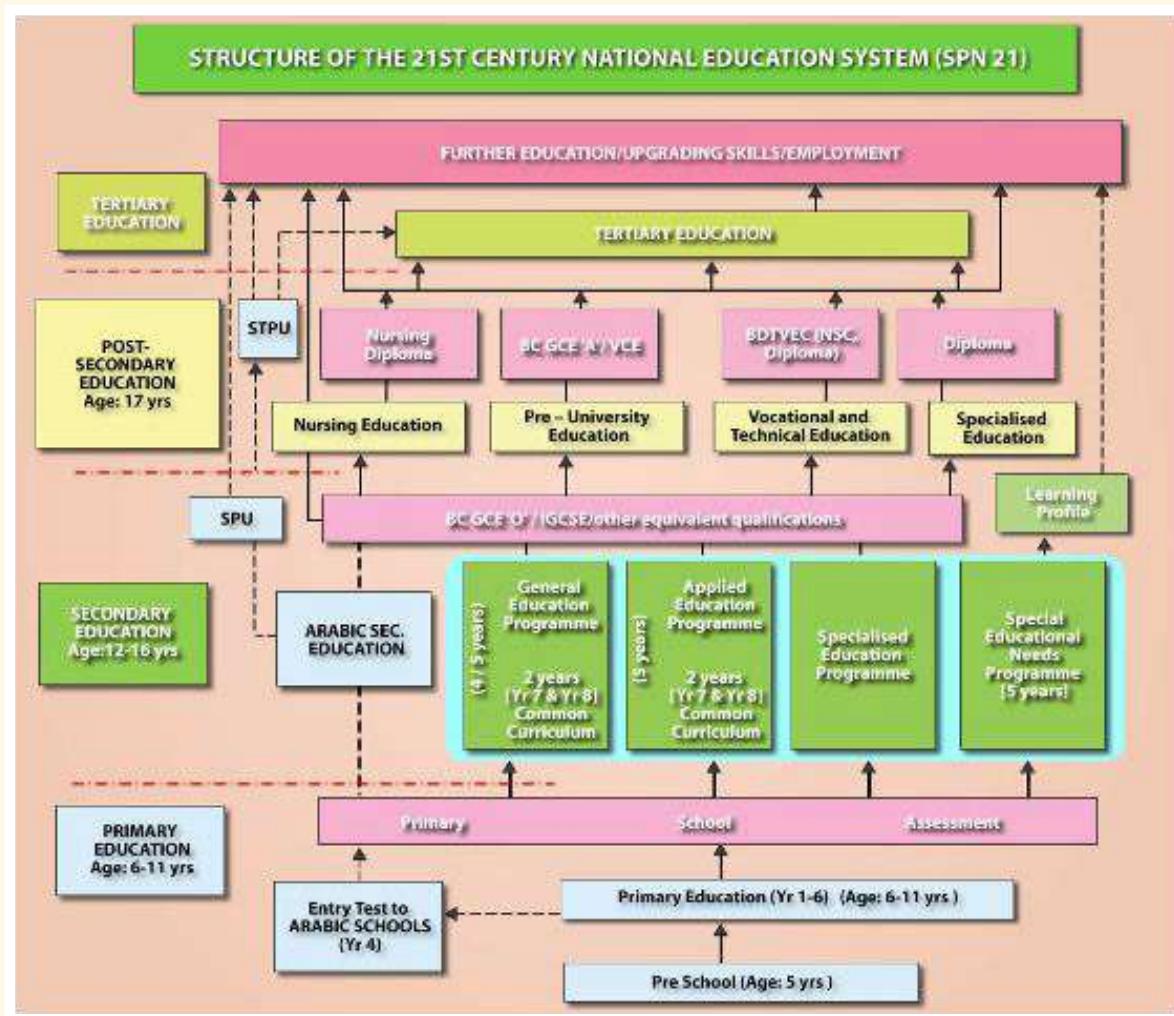


Figure 2. Education system of Brunei Darussalam.

III

Overview of Malnutrition, Food, and Healthy Diet Practices among School-Age Children and Adolescents

The Global Nutrition Report¹ shows that Brunei is on the right track to meet some areas of the global nutrition targets (Global Nutrition Report, 2016). However, the country is likely not to meet all maternal, infant, and young child nutrition (MIYCN). Currently, no initiative has been made towards achieving the reduction of anemia among women of reproductive age. At the moment, 16.9 percent of women aged 15-49 years are anemic. The country is still unable to make any progress towards the low birth-weight target, of which 10.8 percent of infants were in the low-birth-weight category at birth. Data were insufficient to indicate the progress towards achieving the exclusive breastfeeding target, as well as for wasting and stunting. The prevalence of overweight children under five years old is 8.3 percent, but insufficient data is available to evaluate whether the country is likely to prevent the figure from increasing.

Brunei has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. The country has shown no progress towards reducing obesity prevalence, with an estimated 15.7 percent of adult (aged 18 years and over) women and 12.5 percent of adult men living with obesity. Brunei's obesity prevalence is higher than the regional average of 8.7 percent for women and 6.0 percent for men. The country is 'on course' to meet the target for diabetes when looking at adult women (9.7% affected), but not for adult men (9.2% affected) (Global Nutrition Report, 2021).

The 2nd National Health Nutritional Status Survey conducted in 2015 revealed that 33.5 percent of Bruneian children were overweight and 18.2 percent were obese (Ministry of Health, 2015). Similarly, one out of two Bruneian children over the age of five was either overweight or obese. The prevalence of childhood obesity in Brunei had shown a dramatic rise of 1 percent per year, an increase from 12 percent to 18 percent from 2008 to 2014 (Ministry of Health, 2016).

The 2014 Brunei Global School-based Student Health Survey (GSHS) report showed that 3 percent of students aged 13-17 years were underweight. There were 35.2 percent and 17.4 percent of the students classified as overweight and obese, respectively. The same survey also found that almost half (46.4%) of the students usually consume carbonated soft drinks one or more times per day over a period of 30 days (Global School-based Student Health Survey, 2014).

¹<https://globa1nutritionreport.org/resources/nutrition-profiles/asia/south-eastern-asia/brunei-darussalam/?country-search=Brunei>

A. Current Status of School Canteens

The management of school canteens in Brunei is under the Department of Administration and Services of MoE. Based on the data provided by *Unit Pendidikan Kesihatan* [Health Education Unit], *Jabatan Sekolah-Sekolah* [Department of Schools] in 2019, 151 school canteens were assessed and graded in 2017. The result is shown in Figure 1.3.

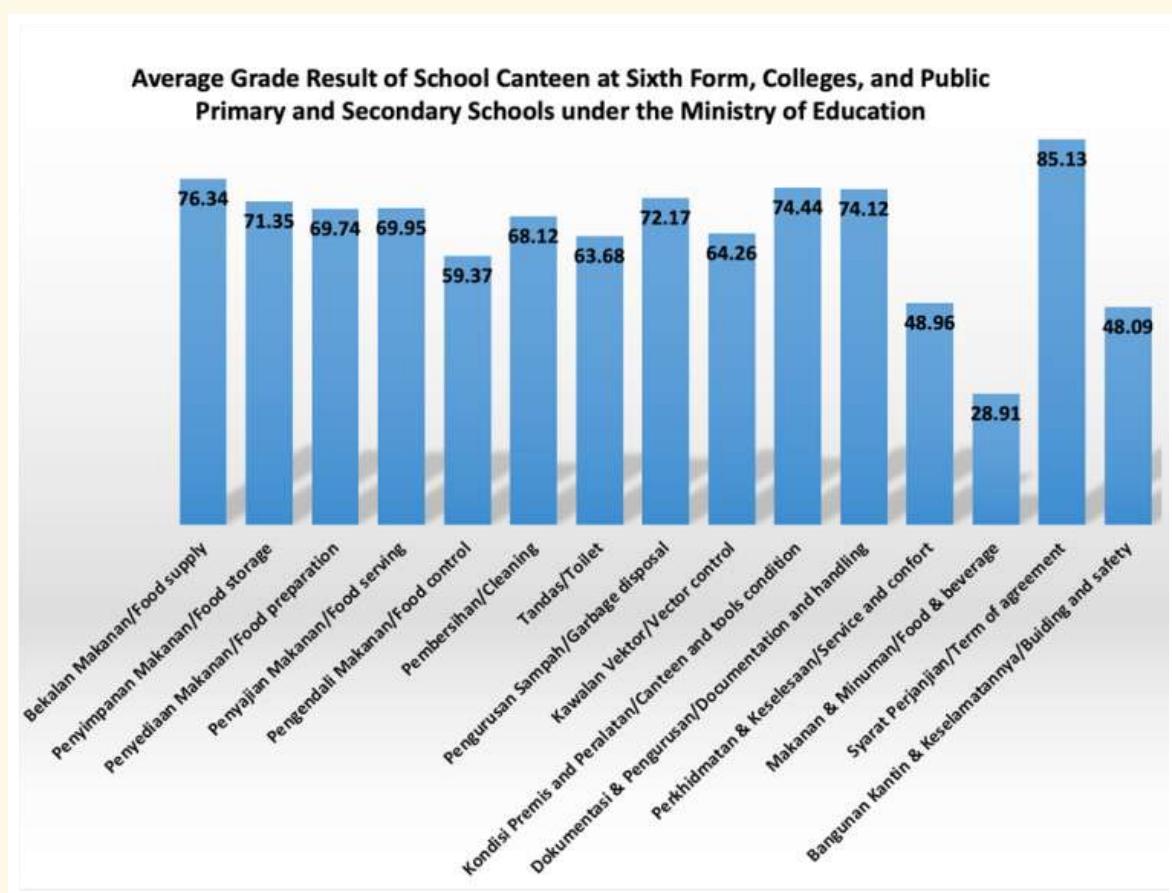


Figure 3. Average grade results of school canteens at sixth form, colleges, public primary and secondary schools under the Ministry of Education in 2015-2017.

Based on the grading of 148 school canteens, no school canteen achieved grade A; 94 school canteens (64%) received grade B, 42 school canteens (28%) received grade C, 10 school canteens (7%) received grade D, and 2 school canteens (1%) received grade F. After further inspection, 14 school canteens passed the inspection, 109 school canteens failed, and 25 school canteens considered invalid due to expired license or service cancellation.

Since the 1980s, the MoE and MoH have been working together to implement several programs to improve the school canteen environment. To combat the selling of junk foods and carbonated drinks in school compounds, a simple school canteen guideline was developed by the dietitians from the MoH Community Nutrition Division. As the demands for fast-food chains increased in the late 1990s, the MoH stepped up and cooperated extensively with the MoE to produce a comprehensive guideline that was disseminated to government and

private schools in early 2001. The guideline was further updated in 2009 and was officially launched nationwide. Using the Traffic Light system to identify food and drinks that should be or should not be sold at school canteens, it uses a color-coded format. The “green choices” refer to foods and drinks which could be sold daily, the “amber choices” are those that should be sold only twice a week and the “red choices” are those that should not be sold at all at the school canteen. This school canteen guideline was named as “*Makanan dan Minuman Kantin Sekolah Negara Brunei Darussalam*” or “Foods and Drinks in School Canteen, Brunei Darussalam”.

In response to World Health Organization (WHO) Commission Report on Ending Childhood Obesity (2016), the guideline went through another cycle of revision in 2017. The revisions made were based on an extensive literature review and upon consultation process that included dietitians, canteen managers, school leaders and parents to understand the barriers and enablers for increasing healthy food and drink choices in Brunei school canteens. This guideline was renamed officially as “*Panduan Penjualan dan Penyajian Makanan dan Minuman Sihat Di Sekolah*” [Guidelines for Foods and Drinks Being Sold and Served in School]. This guideline will be discussed in more detail in the following chapter.

B. School Canteen Roles and Significance

School canteens have played significant roles in providing foods and beverages for the school community, especially students. Considering that a school canteen will contribute to both positive and adverse health effects, the canteen operators must follow the MOH and MoE guidelines.

IV

Overview of Policy Framework on School Health and Healthy School Canteens

A. Healthy School Canteen Guidelines

The Government of Brunei Darussalam, through the MoH and the MoE, had developed policies and guidelines about nutrition for the public and school community to ensure that they acquire a healthy habit in their food and beverages intake. In 2013, the MoH formulated the Brunei Darussalam National Multisectoral Action Plan for the Prevention and Control of Noncommunicable Diseases (BruMAP-NCD) 2013-2018 which included the promotion of a balanced and healthy diet as one of the objectives. One of the national targets to be achieved was for all school canteen operators to stop selling sugar-sweetened beverages containing six grams or more of sugar per 100ml.

For the primary school section, several school canteen monitoring programs had previously been conducted. To date, three school canteen guidelines have been released.

The first canteen guidelines called '*Buku Garispandu Penjualan Makanan dan Minuman di Katin Sekolah*' [Guideline Book for the Sale of Food and Beverages in the School Canteen] were released in 1999. The guidelines use the traffic light system. Copies of the guidelines have been distributed to all of the schools in Brunei. The implementation of the guidelines was monitored by the Health Promotion Unit (HPU), and also *Bahagian Permakanan Masyarakat* [Community Nutrition Division] of MoH.



Figure 4. School canteen food and beverages in Brunei Darussalam.

The second guidelines on the school canteen were released in 2009 by MoH. The implementation of these guidelines was monitored by the HPU, Department of Schools under the MoE (however, this unit no longer exists now), and *Bahagian Permakanan Masyarakat* of MoH. The revision mainly focused on controlling the sale of 'yellow' coded foods up to twice per week only. Based on the short summary of the report from the HPU, several issues were found such as canteen operators did not follow and misunderstood the guidelines.

To help the vendors understand the canteen guidelines better, another monitoring program was established. The program was called the '*Program Meningkatkan Kualiti Penyediaan Makanan dan Minuman Katin Maktab-Maktab dan Sekolah-Sekolah Negara Brunei Darussalam*' [Quality Improvement Program for Preparing Foods and Drink at Colleges and Schools in Brunei Darussalam], which took place between September 2012 until July 2013. It was also as a follow-up to the publication and provision of various healthy cooking and eating resources.



Figure 5. Leaflet 'Examples of Healthy School Canteen Menus' ('Contoh Menu Sihat Katin Sekolah') published by the Ministry of Education.

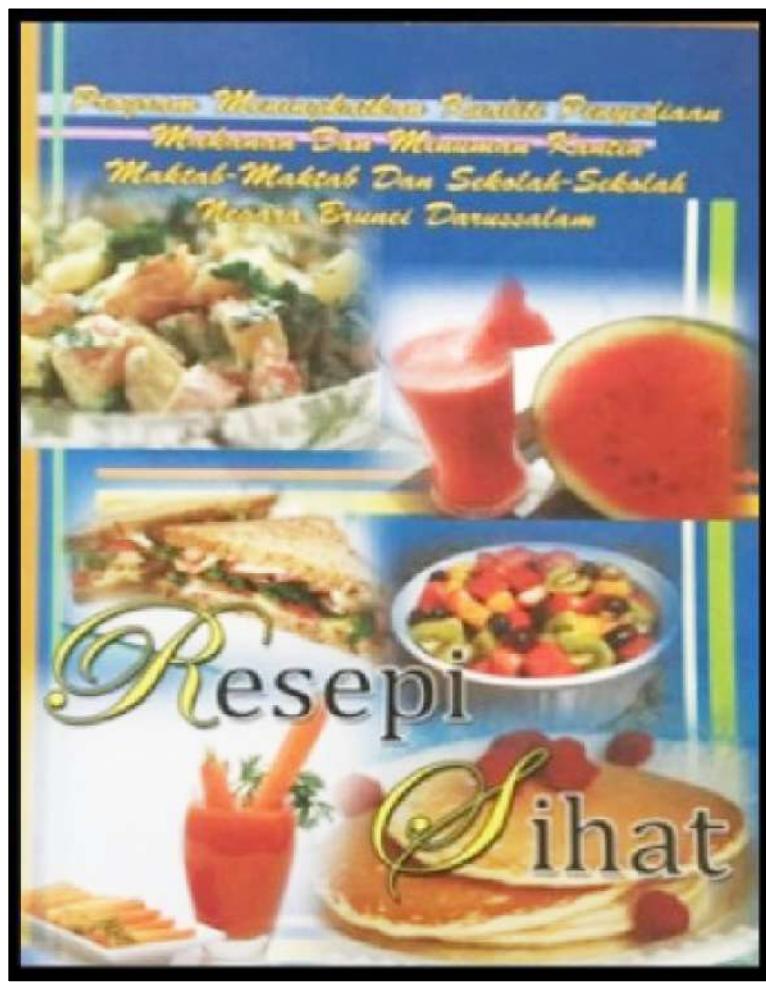


Figure 6. ‘Healthy Recipes’ book (*Buku ‘Resepi Sihat’*) published by the MoE.

The program was a multi-sectoral approach involving other government agencies including the MoRA, MoYCS, Ministry of Home Affairs (MoHA), and a private agency, Brunei Shell Marketing. The program had produced some positive outcomes such as canteen operators started to sell cut fruits and juices. However, there were still many canteen operators who were selling more of the ‘yellow’ as well as red coded foods and drinks.

The updated version of the school canteen guidelines entitled '*Panduan Penjualan & Penyajian Makanan dan Minuman Sihat di Sekolah*' [Guidelines on the Sale and Serving of Healthy Foods and Beverages in Schools] was released in 2018. Copies of this new set of guidelines were distributed to all schools in October 2018. It does not anymore use the traffic light system but it emphasizes more on portion size and healthier cooking methods. The impacts of the new guidelines are currently still under investigation.



Figure 7. Guidelines on the sale and serving of healthy foods and beverages in schools
(*Panduan Penjualan & Penyajian Makanan dan Minuman Sihat di Sekolah*)
Published by the MoH in collaboration with MoE (2017).

B. Other School Health Initiatives

The MoH has other initiatives to improve a healthy school environment. Among them is the school-based healthy lifestyle program called Fit4Good. Fit4Good program is a six-month school-based healthy lifestyle intervention designed to reduce and control weight gain among adolescents with obesity. The program's primary goals are to instill positive behavioral change through group educational and motivational approaches and to establish an enabling environment through collaboration with school canteen vendors and teachers. The school canteen was one of the interventions. The program offered school canteen vendors and operators training on healthier food choices in compliance with the School Canteen Guidelines. Schools participated in a healthy cooking session or competition. The competition aimed to instill awareness among the students of easily prepared and nutritious meals.

The MoE, through the HSSE Division under the Department of Administration and Services, has developed a Standard Operating Procedure for Handling Incidents of Food Poisoning (*Prosedur Operasi Standard (SOP) Keracunan Makanan di Sekolah-Sekolah Kerajaan Seluruh Negara Brunei Darussalam*) (Ministry of Education, 2021) to guide teachers, students and the school community. In addition, the Co-curriculum Education Department carries out *Sihat Cergas* (Healthy and Active) program aimed to enhance the awareness of students on healthy living and on ways to control and stop weight gain and create school environments that encourage the adoption of healthy diets. The target groups for the program were Year 4 and Year 7 students with a Body Mass Index (BMI) within the 97th percentile. The MoE, in collaboration with the MoH, also provided VCD on '*Menu Sihat Pelajar Cergas*' (Healthy Menu for Active Students). Copies of the VCD were distributed during the socialization of *Panduan Penjualan & Penyajian Makanan dan Minuman Sihat* at schools in October 2018.

C. Policy Implementation Challenges

There are several challenges in implementing a healthy school canteen-related policy. The issues on the School Canteen Grading Initiative by MoE launched in 2015, in collaboration with the MoHA and MoH, are related to the limited commitment and understanding of canteen operators/vendors toward healthy foods and beverages. To address this issue, the Department of Schools' Health Promotion Unit of MoE suggested holding more health roadshows to equip students with knowledge on healthy eating, adding that a cooking demonstration for school canteen vendors should be held at schools to teach them proper ways of preparing healthy food (Brunei Times, 2016).

In implementing a healthy school campaign or policy, an environment promoting behavioral changes such as healthy eating habits is very crucial. This is supported by a study by Ahmad S.R. (2016) stating that it is essential to have environmental improvements to encourage health-related behaviors. School environments are dynamic food and policy environments that can change both the risks and protective factors for healthy eating and physical activity among children.

V

Best Practices of Healthy School Canteens

A. Selection of Schools with Healthy School Canteens and Data Collection

All schools featured here are government or public schools. They were selected on the basis of whether they were located in the urban or rural region of the country. Questionnaires developed by SEAMEO RECFON were sent to the school's principal by the interviewers (a representative each from the *Bahagian Permakanan* [Foods Division] of MoE, and the Health Promotion Centre of MoH). The schools were given two weeks to complete the questionnaire and were followed up either via WhatsApp or Email.

B. Best Practices, Major Challenges and Strategies, and Future Plans of Selected Schools with Healthy School Canteens

1. Sekolah Rendah Tungku, Cluster 3

Sekolah Rendah Tungku [Tungku Primary School], Cluster 3 was established on 1 February 1973. The school vision is 'Effective School, Quality Education'. The school has 49 teachers and 458 students. It is located in Simpang, Muara District, classified as an urban area.

Brief Descriptions of the School Canteen and Its Major Challenges

a) Physical Description of the Canteen

The canteen is a small separate building (rectangular-shaped), with an open window for selling food and drinks. Inside the canteen is a space for cooking and storage of food and drinks. The school canteen is small and requires improvements.

b) Meal Service Provided

The canteen opens during break time (30 minutes for both morning and afternoon sessions) only. The canteen exclusively serves the students, teachers, and staff of the schools. The school canteen has only one vendor, which is usually the case in many schools.

c) Basic Management of the Canteen

The school ensures that the canteen is always kept clean. The canteen follows the guidelines on food sales provided by the MoH and MoE. The school canteen has signed a canteen agreement or contract (to start the business and agreeing on the canteen guidelines) between the school and *Bahagian Permakanan* [Foods Division] of the MoE. A special task force consisting of the school teachers and appointed by the school principal watches over the canteen in terms of cleanliness, management, healthy food and drinks sale. The school canteen is checked twice per year by the staff of *Bahagian Permakanan* of MoE as part of their external support.

d) Major Challenges

The school has limited infrastructure and facilities to run a healthy canteen, due to its small-sized building. Tables and chairs are not available for the students. Instead, the students are advised to eat their meals and snacks in the school hall. The school lacks adequate capabilities to manage the facilities and thus they are poorly maintained. The busy work load of school teachers also affect the regular monitoring of the school canteen operations.

Best Practices of the School Canteen**a) Adherence to MoE and MoH Guidelines**

The school adheres to the guidelines provided by the MoH and MoE. This is supported by the appointment of the school's special task force to supervise the canteen operations.

b) Conducting Regular Canteen Check

The school canteen task force and the principal conduct daily regular canteen checks to ensure that the vendor complies with the MoH and MoE guidelines.

c) Promoting cleanliness and hygiene as priority

The school highly emphasizes cleanliness and hygiene in all areas of the school including the canteen as specified in the contract of the vendor.

d) Cooperation between the canteen vendor and school management

The canteen vendor and school management work well together. Both parties always communicate with each other, through both formal and informal ways, to immediately respond to matters regarding the school canteen operations.

Plans to Sustain the School Canteen Operations and Its Best Practices

The school receives continuous support from the MoH and *Bahagian Permakanan* of MoE. Funding for most activities comes from school activities and from the students' participation in winning competitions/contests which will go to the school fund. The school shall sustain the conduct of staff development activity every Wednesday afternoon on various topics which may include topics related to healthy lifestyle and healthy school canteen.



Figure 8. Front view of the school canteen.



Figure 9. School canteen committee members meet regularly.



Figure 10. School canteen committee members and canteen operator assess the requirements and improvements needed to safety of school children and flow of canteen service when the school reopens.

2. Sekolah Rendah Puni, Temburong

The school was established in 1959 in Temburong District which is considered as a rural region in Brunei. Its vision is '*Sekolah Gemilang, Murid Cemerlang, Negara Terbilang*' [Glorious School, Brilliant Students, Well-known Country]. It has 11 teachers and 81 students.

Brief Descriptions of the School Canteen and Its Major Challenges

a) Physical Description of the Canteen

The canteen is a small separate building (rectangular-shaped), with an open window for selling food and drinks. Inside the canteen is a space for cooking and storage of food and drink supplies.

b) Meal Service Provided

The canteen opens during break time (30 minutes for both morning and afternoon sessions) only. The canteen serves only the students, teachers and staff of the school. The school has one vendor which is usually the case in many schools in Brunei.

c) Basic Management of the Canteen

The school canteen operates according to the guidelines of MoH, namely the '*Buku Panduan Penyediaan Makanan*' [Food Preparation Guidebook] and '*Buku Panduan SOP Insiden Keracunan Makanan*' [Food Poisoning Incident SOP Handbook]. '*Garis Panduan daripada Permakanan dan Sekolah-Sekolah*' [Guidelines for Nutrition and Schools] is usually given to the canteen operator during the contract signing with the school. The school will advise the canteen operator if the food and drinks are found unsuitable to be sold to the school children. The school principal has appointed *Ahli Jawatankuasa* or Task Force comprising of teachers and staff, to monitor the canteen and to ensure that they adhere to the guidelines.

The school canteen receives a surprise visit for inspection by the staff of *Bahagian Permakanan* of MoE. The task force also visits the canteen every day to check on the food and drinks sold, and ensure that the vendor follows the guidelines. The school administration also encourages the canteen vendor to prepare food within the school compound, rather than from home. Students are also encouraged to bring healthy foods and drinks from home and avoid sharing them among friends. The school teachers also remind the students to wash their hands before and after eating. To keep the environment clean, students are reminded to clean up well after eating their meals, i.e., wash their hands and dispose their rubbish in designated bins.

d) Major Challenges

Due to the age of the school building, there are always issues with the sink drainage system of the canteen. There is also no proper place available for students to eat their meals. Places to keep and store foods in the canteen are also insufficient. The busy work load of school teachers also affect the regular monitoring of school canteen operations.

Best Practices of the School Canteen**a) Adherence to MoE and MoH Guidelines**

The school adheres to the guidelines provided by the MoH and MoE. This is supported by the appointment of the school special task force to supervise the canteen operations by conducting daily regular checks.

b) Food Preparation at the Canteen

The canteen operator prepares food at the canteen rather than from their home. This enables the task force to see the preparation process during their regular inspection in the morning to ensure the cleanliness and quality of the food and drinks sold to students and teachers.

c) Canteen as a learning venue for students

The school also uses the school canteen to teach students about healthy foods and drinks as well as learn about money spending related to their mathematics subject.

d) School Healthy Initiative

The canteen is involved in the school's Healthy Eating Program that emphasizes a healthy diet and nutrition among students. Classroom session includes healthier nutrition

practices. For example, the *Aktiviti Doktor Muda* [Young Doctor Project] is a once-a-week activity that provides the venue for the students to give a presentation related to health such as health in Islam, healthy food, self-hygiene and health and infectious diseases.

Plans to Sustain the School Canteen Operations and Its Best Practices

The school obtains support from the MoH's Health, Safety, Security and Environment (HSSE) Unit, and the Unit *Permakanan dan Asrama* [Foods and Dormitory Unit]. Sources of funding are from the school canteen's monthly rental and students' involvement in sports and co-curricular activities. The school shall continue conducting seminars for teachers related to healthy food preparation and nutrition in general. Topics on healthy nutrition are also incorporated into subjects like Science, Malay and MIB.



Figure 11. The HSSE team of MoH inspects the condition of the school's canteen.



Figure 12. Students buy food at the canteen during their break time.



Figure 13. Affordable snacks are available in the school canteen at 50 cents each to help underprivileged students.



Figure 14. The multi-purpose hall is used for eating breakfast and snacks during break time.

3. Sekolah Rendah Rataie Mukim Bokok Temburong, Cluster 1

The school was established in 2014 in a rural region of Temburong District. The vision of the school is '*Permakanan Sihat, Minda Cerdas*' [Healthy Eating, Smart Mind]. There are 25 teachers and 274 students in the school.

Brief Descriptions of the School Canteen and Major Challenges

a) Physical Description of the Canteen

The canteen is a small separate building (rectangular-shaped), with an open window for selling food and drinks. Inside the canteen is a space for cooking and storage of food and drink supplies.

b) Meal Service Provided

The canteen opens during break time (30 minutes for both morning and afternoon sessions) only. The canteen serves only the students, teachers and staff of the schools. There is only 1 vendor in the school which is usually the case in many schools in Brunei.

c) Basic Management of the Canteen

The school has a ‘School Canteen Committee’ and ‘School Health Committee’ to ensure health promotion is always taken into consideration. These school committees are composed of the school teachers. The School Canteen Committee regularly checks the canteen to ensure that the canteen provider adheres to the standards set by the MoE and MoH in terms of type of food, preparation of food, safety and standard operation as well as cleanliness. Any non-compliance to the standards is immediately relayed to the canteen operator for appropriate action.

d) Major Challenges

Ceiling fans need to be installed in the canteen to improve the ventilation. Other facilities were reported sufficient by the school. The busy work load of school teachers also affect the regular monitoring of the school canteen operations.

Best Practices of the School Canteen

a) Cooperation between the canteen operator and school management

The canteen operator and school management work well together. Both parties always communicate with each other, both through formal and informal means, regarding the school canteen matters.

b) School Healthy Initiative

The school also emphasizes a healthy diet and nutrition among students through their own healthy eating programs such as fruit eating campaign and drinking water campaign. The school allocates a budget to implement these programs that are integrated in the Physical Education and Science subjects of the students and also involve the school canteen.

Plans to Sustain the School Canteen Operations and Its Best Practices

Through the external support from MoE’s HSSE and *Unit Permakanan Sekolah*, JSS, the school shall continue to ensure cleanliness and proper hygiene in food preparation in the canteen by conducting daily monitoring by the School Canteen Committee. Whenever there is opportunity, the school shall allow the teachers to participate in any activities or workshops related to healthy nutrition or lifestyle organized by the MoH.



Figure 15. Teacher leads the prayer before students have their meals at breakfast or during break time at the school dining area.



Figure 16. Teachers demonstrate the proper way to line up at the canteen.



Figure 17. Students are reminded to drink water every day as part of the school's health programme.

4. Sekolah Rendah Perpindahan Bukit Beruang II, Tutong

The school was established in 2011 in a rural region of Tutong District. The vision of this primary school is ‘Manifesting generation with caliber. There are 25 teachers and 350 students in the school.

The school conducts a BMI check among the students every 6 months. It also promotes brushing of teeth and washing of hands before and after eating among the students. The Year 2 Science syllabus also teaches about healthy and junk foods. Healthy food preparation activity is conducted in class. The school also has a drinking water campaign two times per week as well as during co-curricular activities, such as brisk walking and aerobic exercise.

Brief Descriptions of the School Canteen and Major Challenges

a) Physical Description of the Canteen

The canteen is a small separate building (rectangular-shaped), with an open window for selling food and drinks. Inside the canteen is a space for cooking and storage of food and drink supplies. Since it is a new school, the facilities and infrastructure are in good condition.

b) Meal Service Provided

The canteen opens during break time, 30 minutes for both morning and afternoon sessions. Like most schools, the canteen sells meals and snacks, and serves only the students, teachers and staff of the schools. There is only one vendor in the school canteen.

c) Basic Management of the Canteen

The school follows the guidelines by the MoH and MoE in operating the school canteen. The school participates in the government’s breakfast scheme, providing soya milk, water, UHT milk, crackers, bread, and oat biscuits for their students. There is also a task force of teachers that checks the daily operations of the school canteen including the provision of breakfast to the students. The task force ensures that the canteen is clean and the preparation and serving of food and drinks follow the MoE and MOH guidelines. The task force informs the canteen operator on issues regarding the canteen operation for immediate and appropriate actions needed.

External involvement includes visits by the *Bahagian Permakananan dan Asrama* [Foods and Dormitory Unit] of the MoE to ensure that the canteen is following the guidelines. In addition, the canteen operators are required to complete all the required documents and health checks before running the canteen.

d) Major Challenges

Building maintenance comes under the management of the Department of Planning and Estate Management (JPPE), Ministry of Education. If there is any damage, JPPE will efficiently fix the issues. In terms of safety, fire extinguishers, first aid kit, sink and rubbish bins have also been made available. The school does not have any major challenges in operating its canteen.

Best Practices of the School Canteen**a) Adherence to MoE and MoH Guidelines**

The school adheres to the guidelines provided by the MoH and MoE. This is supported by the appointment of the school special task force to supervise the canteen operations.

b) Conducting Regular Canteen Checks

The school principal and the task force conduct regular daily checking of the canteen operations to ensure that the vendor complies with the MoH and MoE guidelines. The vendor is informed of any issues for immediate and appropriate actions needed.

c) Information Campaign on Healthy Eating

Posters related to healthy food and drinks are displayed around the school as well as in the canteen area as reminders to students, teachers and staff.

d) Incorporating Healthy Nutrition in Class Topics

Concepts and principles of healthy diet and lifestyle are incorporated in the official school textbooks and classroom discussions in relevant subjects.

e) Providing Affordable Food Prices to Students

The school provides photos of the foods sold in the canteen with their corresponding prices that are affordable to the students.

Plans to Sustain the School Canteen Operations and Its Best Practices

The school shall continue to regularly organize capacity building activities for the school teachers and vendor in relation to MoH and MoE canteen guidelines. The canteen task force shall sustain its daily checks on the canteen operation and other school teachers shall also be encouraged to do the same when they themselves go to the canteen to buy their food/drinks there. The school management also aims at increasing awareness among teachers and students on healthy diet and lifestyle via posters around the school compound and organizing seminars.



Figure 18. Students line up to buy foods and drinks in the school canteen.



Figure 19. Food and drinks served in the school canteen.

VI

Lessons Learned and Recommendations

A. Summary of the Findings

All the schools featured here have been following the canteen guidelines from the MoE and MoH of Brunei Darussalam. All the schools have appointed their own school teachers to monitor canteen hygiene and sanitation including healthy foods and prices. Healthy lifestyle topics are included in the curriculum in science and civic subjects. Conditions of the facilities and buildings of the schools vary depending on the year they were established but are still in good condition in general. However, several facilities need proper maintenance to improve and sustain the operation of a healthy canteen.

B. Lessons Learned and Recommendations

1. Full Implementation of the School Canteen Guidelines

In terms of ensuring proper nutrition of students and also healthy school environment, the Brunei Government has developed rules and regulations. However, full enforcement is still lacking particularly on the Healthy Canteen Guidelines introduced in 1994. One of the main reasons for the poor implementation of the Healthy Canteen Guidelines was that the canteen operators misunderstood or misinterpreted some of the guidelines being imposed (Ahmad, 2020). All of the schools ensure there is continuous monitoring in place for the school canteen healthy initiative. The system of monitoring seems to depend on the school management or leaders and availability of teachers/staff to conduct the duties.

The healthy canteen guidelines in Brunei have recently been updated by the MoH Health Promotion Centre (HPC). The new guidelines are at par with that observed in neighboring countries in terms of a greater emphasis on portion sizes. Dissemination of the new guidelines is already in place since April 2020. The HPC is currently in the process of collecting data on the effectiveness of the new guidelines. Nationwide dissemination of the guidelines particularly to parents and the general population, will be useful, in this case.

2. Involvement of Parents and the Community

Involvement of parents might be useful to support the healthy canteen initiative. At the moment, involvements of parents in the Brunei school canteen are not yet optimized. Research results from other countries have shown that parents' support contributed a positive outcome to the school canteen initiative. In Italy, the involvement of parents is sought towards the 'governance' of school meals services (F Gallis et al.). In Australia, a multi-strategic intervention that includes parents has been shown to give positive impact to the healthy canteen initiative (Wolfenden et al., 2017). 'Australian parents help teachers in monitoring school canteen operations (Yoong SL, et al., 2015).'

Therefore, parents' awareness of the school healthy canteen policy is sought. Currently, no evidence is available in Brunei regarding the level of awareness of parents

on this matter. Despite this, parents in Brunei do believe that healthy diet practices are important for children (Ahmad, 2020). Increasing awareness of the school nutrition policy will increase parents' support to the health initiative (McBride NA et al.).

3. Some Barriers

Some barriers were previously identified that might affect the implementation of the healthy canteen initiative (Ahmad et al., 2019). These include the busy schedule of teachers to handle the healthy canteen initiative. In order to resolve this issue, it is suggested to assign or appoint a health instructor in each of the Bruneian schools to fully focus on handling the healthy school canteen programs. Fines and penalties are also not fully enforced on school canteen operators for not following the healthy canteen guidelines (Ahmad, et al., 2018). Children themselves are fully aware of the importance of a healthy diet but not necessarily putting them into practice (Ahmad et al., 2019; Murang et al., 2017). Most children demonstrated unhealthy eating habits and frequently consumed unhealthy foods. The factors influencing children's eating behavior included food preferences, familial factors (parental style and parenting knowledge), food accessibility and availability, time constraints, as well as convenience. These factors hindered them from adopting healthy eating practices (Talip et al., 2017). From another study by Ahmad, S.R. et al. (2019), it was concluded that children have a good understanding of the detrimental effect of poor diet and inactivity on physical health, but, without a supportive environment, children are faced with a significant barrier in translating their knowledge into action. The students were keen to do more fun activities such as sports activities in the school but were hindered by the availability of time, equipment, and safety within the school compound. Fines and penalties are also not fully enforced on school canteen operators for not following the healthy canteen guidelines (Ahmad, et al., 2018).

4. Creative Teachers

School principals and teachers in Brunei were found to be very proactive and vastly creative in terms of handling healthy nutrition programs, and that includes the monitoring of the school canteen healthy initiative (Ahmad et al., 2018). It is suggested that appropriate forms of recognitions and incentives could be given to these school principals and teachers to sustain their commitment to operate a healthy school canteen.

5. School Canteen Facilities

In some cases, the schools reported that their healthy canteen initiative was impeded by the poor resources including the requirement of better canteen facilities. This is particularly an issue for very old government school buildings. The new school buildings were reported to be well-maintained by the relevant authority by far.

VII

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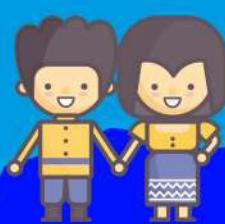
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Cambodia

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Geographic and Sociodemographic Information

Cambodia is located in the Southeast Asian region, bordering on Thailand, Lao PDR, and Vietnam. It sits in the Indochina Peninsula and stretches up to 443 kilometers long, adjacent to the Gulf of Thailand, with total land area of 181,035 square kilometers. It lies in a tropical region with two seasons, namely: the rainy and dry seasons. Cambodia is characterized by a low-lying plain surrounded by hills and mountains. Its two main rivers, the Tonle Sap and Mekong Rivers, flow across the country, benefitting the agricultural sector.

Cambodia has 24 provinces and one municipality, with Phnom Penh as its capital city. Each province is divided into a number of districts. Each district is sub-divided into communes then into villages. Moreover, each province has one or two cities depending on its economic and population growth rates.

Cambodia had a population of 15,552,211 million in 2019. Over 60 percent of the whole population are below 25 years old. The total fertility rate was 2.5 children per woman in 2018. The country has a population growth rate of 1.4 percent, adding more than 232,000 people to the total population annually. Female-to-male ratio stands at 1.04.

Tonle Sap area, the heartland of Cambodia, is a densely populated plain, hosting 96 people per square kilometer. Phnom Penh has the highest number of population and the highest population density, while Mondulkiri Province has the lowest population density.

The population is dominated by the Khmer ethnic group, whereas the minority groups are Chams, Vietnamese, and Chinese. Other ethnic groups include Khmer Krom, Khmer Surin, Khmer Loeu, Kuy, Phnong, Tampuan, Stieng, Ra'ong, Samre, Jarai, and Mong. About 80 percent of the population adhere to Buddhism, while the rest either practice Islam, Hinduism, Taoism, or Christianity.

Cambodians' life expectancy is 70 years in 2021, recording a slight increase of 0.31 percent from the 2020 figure. The median age of the population is 25.63 years old. Specifically, male life expectancy is 67.75 years, while that of females is 72.16 years.

The official and national language of Cambodia is Khmer language (or Cambodian), influenced by two main religions, namely Buddhism and Hinduism. There are a variety of dialects in different provinces spoken by various ethnic groups, especially in rural areas, such as Battambang, Phnom Penh, Northern Khmer, and Southern Khmer. The formal language for instruction is Khmer language. English is the second language for communication and instruction, particularly spoken among young people.

Cambodia is a constitutional monarchy with a ceremonial figure serving as the head of state. More specifically, it is a multi-party pluralistic democratic monarchy. The prime minister is the head of the royal government.

Cambodia had a Gross Domestic Product (GDP) per capita of 1,614 USD in 2019 and was included in the lower-middle-income country category. Because of its growth rate in garment exports, tourism, and construction sector, Cambodia turned into the fastest-growing economy in the world with an average annual growth rate of 7 percent in 2019. However, its GDP growth rate in 2021 was merely 1.9 percent (ADB, 2021). In 2018, the country

achieved a total GDP of 24.57 billion USD. Textile goods account for 70 percent of the total exports of Cambodia. Raw materials, such as rubber, fish, cashew nuts, fruits, rice, and processed food, are exported to target countries, including the United States, European countries, Hong Kong, Singapore, and the UK.

The annual household income per capita in Cambodia was 1,548.682 USD in 2019. The country's minimum wage was around 190 USD monthly in 2021. The main sources of household income are textile industry, tourism, construction, services, and agricultural activities. Cambodia's Human Development Index (HDI) reached 0.594 in 2019, categorized as a medium level of development. This figure is based on life expectancy for health, schooling years, and gross national income of the people. In 2019, Cambodia notched a gross national income per capita of 4,246 USD.

The Ministry of Health is responsible for ensuring the people's health and well-being. To cure and treat patients in time, each province, municipality, and district must have at least one hospital or health center. Hospitals and health centers in each province, municipality, and district provide comprehensive health care services to the people directly because they are close to households, making it convenient for people to get treated quickly. In addition, four to five national hospitals provide health care services. They are located in the downtown of Phnom Penh Municipality. There are also specialized national hospitals, such as a hospital for eyes, mouths, ears, noses, and throat and a hospital for skin care and dermatology. About 25.5 percent of family households use tap water for drinking daily while 84 percent of them have access to electricity.

II

Overview of Educational System

To functionally guide the education sector, Cambodia devised an Education Strategic Plan (ESP) for 2019-2023. A range of policies on new general schools, school health, and human resource development in education sector, a master plan for technical education at the upper secondary level, and teacher policy action plans serve as the guidelines for educational development. Overall, the education system is managed and regulated by the Ministry of Education, Youth, and Sports (MoEYS) at the national level and by provincial governments, district administrators, and schools at the sub-national level.

Cambodia has four educational cohorts, primarily consisting of preschool (K1, K2, and K3), primary education (grade 1, 2, 3, 4, 5, and 6), secondary education (lower and upper secondary levels), and higher education (associate, bachelor's, master's, and doctoral degrees). A six-year-old child is required to enter grade 1 at a primary school nearby. The lower secondary level comprises grade 7, 8, and 9, while the upper secondary level comprises grade 10, 11, and 12. The 9-year basic education is mandatory for children and youth to ensure social inclusivity, equity, and sustainable development that is free of charge. Technical education at the upper secondary level (grade 10 to 12) offers 10 study programs, including agronomy, animal husbandry, accounting and management, multimedia design, information technology (IT), mechanics, electronics, electricity, tourism and hospitality, and food processing.

Cambodia has the following number of institutions and students: 1) 8,067 kindergarten schools (both private and public) with a total of 363,681 children; 2) 7,282 public primary schools with 2,023,473 students; 3) 1,247 public lower secondary schools with 618,968 students; 4) 544 public high schools with 334,712 students; and, 5) 124 higher education institutions (48 public and 76 private) with a total of 222,879 students. Cambodia has a total of 121,680 education staff at both the national and sub-national levels. Out of this number, there are 3,721 pre-school teachers, 54,870 primary school teachers, 42,343 lower secondary school teachers, 2,357 lower secondary sports teachers, 16,518 upper secondary teachers, 1,636 higher education lecturers, 47 primary school education inspectors, and 125 secondary education inspectors.

The Sustainable Development Goal 3 (SDG3) on “Ensuring Healthy Lives and Promoting Well-Being for All at All Ages” relatively impacts students’ academic achievements. For example, from 2000 to 2015, infant mortality rate decreased from 95 to 50 per 1,000 live births in Cambodia. Furthermore, more than 95 percent of students are being dewormed twice a school year.

To support the formal education, non-formal education, youth development programs, and physical education and sports are introduced. The courses offered include professional training programs, literacy programs for adults and garment workers, and so forth. Vocational training courses are also provided for prisoners countrywide to rehabilitate their capacities and skills before being released for freedom. In addition, short-course training programs are delivered to school dropouts, displaced persons, returning migrant workers, garment and construction workers, and housewives in order to upskill and reskill them.

Adult literacy rate was 93.3 percent in 2019. Over 50 percent of children aged 3-5 years old enrolled at pre- schools. The enrollment rate at the primary education level was 97.3 percent, while it was 60 percent at the lower secondary level and 31 percent at the upper secondary level (MoEYS, 2020). However, the enrollment rate at higher education level was only 48 percent (MoEYS, 2020). Moreover, 1,150 schools located in 8 provinces (across 25 provinces and municipalities) deliver daily meals to 280,000 children to accelerate schooling rates, while alleviating school dropouts at the same time.

III

Overview of Malnutrition, Food, and Healthy Diet Practices among School-Age Children and Adolescents

Poor nutrient intake might be attributed to stunting, underweight, and wasting among students. Undernutrition remains a health concern for Cambodian children under 5 years old, especially stunting (32%), underweight (24%), and wasting (10%) (World Vision, 2018). Not having enough food to eat results in malnutrition but eating enough food at an inappropriate time can still make children poorly nourished. Likewise, communicable diseases, like diarrhea, resulting from poor sanitation are the primary cause of malnutrition in Cambodia (World Vision, 2018). Malnutrition costs Cambodia 400 million USD annually (World Vision, 2018). Unfortunately, there is no nutritionist or nutrition teacher in place at schools in Cambodia to guide and advise students about nutrition and sanitation. This poor hygienic condition at school intensifies the prevalence of infectious diseases in students and teachers.

Food and nutrition play an integral part in developing human organs, especially the brain. To support this, MoEYS has issued some guidelines and regulations for program implementation at schools. For example, home-grown school feeding and planting programs have been executed at some target schools to provide daily lunch to students on weekdays. The program was fully supported by a Czech development agency as part of the Office Development Assistance (ODA) project of the Organization for Economic Co-operation and Development (OECD) until 2020 at the general and technical high school of Samdech Preah Bat Preah Borumneat Norodom Sihanoni. Meals were provided daily for 280,000 children from 1,150 schools across eight provinces. In 2019, nutritious food was provided for 50,360 students from 205 schools in six provinces. School fairs on healthy home-grown vegetables, culinary exhibitions, and healthy food quizzes and competitions have also been conducted at some schools to enhance healthy food consumption among students and teachers. In 2019, cooking competitions were carried out for 890 education officers at the province, district, and school levels in Utdor Meancheay and Siem Reap Provinces to raise the awareness of healthy food. Some communities in the surrounding area have also donated farm produce and foods to schools. Since 2015, the government, through the MoEYS, has been holding annual National Nutrition Day celebrations to raise public awareness of health and nutrition. The 7th National Nutrition Day in 2020 was held in Kampong Cham Province, highlighting the theme “Strengthening Food System for Healthy Diet”.

IV

Overview of Policy Framework on School Health and Healthy School Canteens

A. School Health Policies and Strategies

Cambodia has implemented some school health policies and strategies that constitute the legal framework supporting the implementation of healthy school canteens. These include an existing sub-decree on hygiene education in 1992, a school feeding program in 1999-2003 in 6 provinces, a deworming policy in 2004, a school health policy in 2006, home-grown school feeding programs in 2014, a national strategy for food security and nutrition in 2014, a school feeding policy for lower secondary and primary schools in 2016, a national school health policy in 2018, and a school feeding and nutrition policy in 2019.

The Second National Strategy for Food Security and Nutrition for 2019-2023 focuses on the food environment enabling healthy food choices, nutritious and sustainable food production, food safety and quality, and promotion of optimal nutritional behaviors. This strategic focus supports SDG3 (“Good Health and Well-being”) in promoting healthy and nutritious foods at schools. The supporting activities highlight regulations and guidelines for decreasing the content of sugar, fat, and salt in processed and cooked foods and for forbidding unhealthy snacks at schools. The strategy also stresses on the engagement of communal and community councils and parents in drawing resources, raising funds, and taking actions to ensure nutritious well-being at schools.

The School Health Policy (2006) is aimed at promoting the health condition of students, teachers, and supporting administrators in public and private schools and communities. Its strategies zoom in on the establishment of health clubs and first aids to students, the provision of nutritious foods to students through school feeding programs by motivating students to make safe and healthy food choices, and the celebration of hygiene and sanitation day or competitions for students.

B. School Canteen’s Roles and Significance

A school canteen plays an integral part in influencing students’ learning outcomes. It provides nutritious food and drink choices for students on a daily basis, while simultaneously reinforcing healthy eating habits taught in the classroom. It can also serve as a public gathering place for students, teachers, and administrators to learn, experience, and share something unique, such as school fairs, festivals, sports events, awareness-raising campaigns on traffic law or marijuana, and fundraising campaigns for charity. In addition, a school canteen is a good place to initiate student internship programs for hotel management and culinary classes. Students can be motivated and be innovative by joining a competition of designing and developing a unique concept for the canteen (i.e., name, logo, menus, posters, flyers, spirit and ambience — colorful lights, flower decorations,

and rap music being played, dish names), and decorating the canteen with attractive themes (e.g., themed days or fun food facts). A school canteen can also provide financial support and assistance for students who work as part-time staff.

At the core of its function, the school canteen can motivate students and teachers to prevent themselves from being infected by diseases which result from poor diet and malnutrition (e.g., obesity and anemia). This is important as such diseases can interfere with students' development, such as personal skills, teamwork, communication, and innovation while working. Students' marketing skills can also be enhanced gradually. Finally, students can act as canteen ambassadors who promote healthy and high-quality foods at the school canteen.

C. Current Conditions of School Canteens

School canteens and stalls in most public and private schools in Cambodia are managed and regulated informally in terms of the quality of foods sold to students and teachers as customers. There is currently no formal regulation or policy on school canteens to ensure an effective and structured operation. However, some guidelines and regulations have been issued by the government that schools should follow to ensure that nutritious foods are sold in their canteens for students and teachers every school year. Most school canteens and stalls are rented to the villagers nearby as vendors to support the school's operation, in addition to the government's budget, so that the nutrition, hygiene, and quality of foods offered will not be solely controlled by individual schools. Due to the absence of formal and specific guidelines and policies from the government on healthy school canteen operation, school canteens are generally unstructured depending on the agreements between the school management and the vendors.

However, some private and NGO-supported schools have formally regulated their school canteens, ensuring that students and teachers receive healthy and nutritious foods while being at school. Students, teachers and food vendors are expected to strictly follow their school canteen regulations. Their school canteen improvement plans, as well as regular guidelines and policies, are based on feedback and suggestions from students and teachers as customers.

For example, the Saint Francois General and Technical Private High School employs some external chefs to cook three meals a day for students only. Mostly, home-grown vegetables and meat are used for cooking. The school has a vast paddy field, vegetable gardens, fish ponds, frog ponds, and pig houses for supplying their daily meals. The canteen applies a self-service concept through which students act as waiters/waitresses, dishwashers, janitors, and canteen ambassadors. The school strictly implements its canteen rules and regulations.

D. Guidelines for Healthy School Canteens

Several government guidelines related to health, food safety, and nutrition serve as basic references for schools to help them operate a healthy school canteen. These guidelines include the 2013 Guidelines for Safety and Healthy Food at School, the 2013 Food and Health Guidebook for School Teachers at 9 Primary Schools, Guidelines for Hygienic Measures for School Breakfast, the 2014 Guidebook on Nutrition and Food Safety, the 2015 Guidelines for Promotion of School Gardening, and the 2016 Guidelines for Health Education Hours for All Schools. These guidelines help fulfill the school canteen's needs continuously by supplying vegetables, fruit, and meat. Most schools in Cambodia operate a school canteen that provides snacks and meals for their students and teachers. Over 90 percent of the school canteens are run by community-based vendors and distributors, so the food quality and hygiene are hard to monitor. One of the government's policies is to encourage the participation of the private sector in education investment.

In addition, health and food safety campaigns and events, as well as school fairs on healthy and safe foods, are often held by some schools. Minimum standards of hygiene of school cafeterias and canteens have been set to ensure continued deliveries of nutritious foods (Royal Government of Cambodia, 2019). A school canteen's materials and facilities must be clean and hygienic at all times and be free of dust and insects nearby (MoEYS, 2013). Particularly, the Food-based Dietary Guidelines for Nutrient Intake of Children were in place in 2020.

Schools are required to have latrines (i.e., one room for school girls and another one for school boys), drinking water facilities, handwashing facilities, and waste bins (non-recyclable and solid waste) in a clean and safe environment (MoEYS, 2016). Furthermore, the guidelines encourage students and teachers to consume healthy and nutritious food at school even if they bring packed meals from home or buy them from vendors outside the school's premise.

E. Challenges to Policy Implementation

Some drawbacks have hindered the implementation and achievements of the policies and guidelines mentioned in the previous section that are meant to give direction on operating healthy school canteens in Cambodia. For example, a number of schools, especially the ones in rural areas, are not hygienic which exposes students to the risk of infectious diseases, possibly leading to poor nutritional status (Foundation for International Development/Relief, 2020). Moreover, there is no formally trained health teacher/professional, or nutritionist stationed at schools to provide and counsel on health-related issues to students. Aside from having limited resources, school community members are not too concerned about having healthy and nutritious foods in the school canteen.

The guidelines and policies on school canteens have not been rigorously formulated for implementation at schools, even though a few public and private schools have their own and strictly adhere to them. The growing cases of overweight and, undernourished, students

have attracted the public attention and calls for more efforts and resources to formulate guidelines and policies on healthy school canteens to promote healthy eating habits and food choices among school-age children and adolescents.

Cambodia spent up to 400 million USD a year to tackle child malnutrition (World Vision, 2018; Bagriansky, 2014). However, the progress of resolving this matter has been slow. The number of children under 5 years old who suffer from malnutrition remained high, compared to the figure in other countries in the region (World Vision, 2018). Therefore, policy actions should be taken to address malnutrition issues by engaging the community and parents in the promotion of school health and healthy food.

Thus far, schools in Cambodia tend to lack healthy food and nutrition education. School meal programs have not been implemented nationwide because of the limited resources. Although relevant and supporting policies, guidelines, and working groups are formulated, the implementation has been ineffective due to the low awareness among the stakeholders, as well as technical and financial constraints. Particularly, there is no specific dietary guideline set for implementation at schools (Foundation for International Development/Relief, 2020).

V

Best Practices of Healthy School Canteens

A. Selection of Schools with Healthy School Canteens and Data Collection

To collect data on healthy school canteen best practices of schools featured in this book, the interview guide developed by SEAMEO RECFON was used. The interview guide covered five domains, namely: 1) School profile; 2) the management of the school canteen; 3) best practices; 4) sustainability; and, 5) future plans. The interview guide was administered to five groups of respondents consisting of school principals, teachers, students, food sellers/chefs/waiters/waitresses, and food suppliers. Additional sets of information were obtained from these groups through focused group discussions. Other information was extracted from relevant literature (Council for Agricultural and Rural Development, 2019; Royal Government of Cambodia, 2019; MoEYS, 2013; MoEYS, 2020; MoEYS, 2019; MoEYS, 2016) and school documents as well as through observations.

During the focused group discussion, a variety of questions were asked to explore how the respondents perceive issues on school canteen best practices and supports their opinions with evidence. Each researcher was handed a sheet containing the questions and some blank space to write down important notes. From the notes generated by each researcher, emerging themes and categories were identified to capture the best practices that the schools have been doing. Each note was subsequently analyzed, compared, and contrasted incident by incident and paragraph by paragraph to explore every single topic concerning the best practices. If salient themes and categories emerged until data saturation, it means that no newer theme or category was grounded from the dataset (Ai, 2019).

Ten schools were initially selected as candidates to be featured in this book. The ten schools were selected regardless of their educational level (ranging from primary to high school level) or management (i.e., private, public, or NGO-owned) but they all must have an operational school canteen.

After refining the selection criteria for the school candidates, five schools were finally selected. In addition to the aforementioned selection criteria, the five schools were chosen by considering their: 1) internal management; 2) communal/school financial support; 3) active involvement/participation of teachers and students from the start of the canteen's operation to the current situation; and, 4) school canteens' policies/regulation/guideline/committee. These four criteria are set to ensure the ownership and sustainability of the school canteens' operation. Furthermore, entrepreneurship perception will be penetrated gradually into students' mindset after daily involvement and operation.

B. Best Practices, Major Challenges, and Future Plans of Selected Schools with Healthy School Canteens

School health is a critical factor for instructional practices supporting students' learning outcomes. To ensure the availability of safe, healthy, and nutritious foods, best practices from each school have been documented.

1. General and Technical High School of Samdech Preah Bat Preah Boromneat Norodom Sihamoni

The school is a public school offering general and technical academic streams at the upper secondary level. Located in Kampong Chhnang Province, the school has 121 teachers and 1,857 students. The school's vision is to develop human resources that possess knowledge, virtues, and creativity to contribute to the social development in Cambodia in line with the market needs. The school has pig and chicken houses, rice farms, vegetable plantations, a fish pond, a food fermentation and processing laboratory, and a mushroom fruiting house.

Brief Descriptions of Samarky Canteen and Its Major Challenges

a) Physical Infrastructure and Facilities

The school canteen, named *Samarky*, was established in 2019 through the financial and technical support of Czech Development Agency. It has separate food stalls with tables and chairs for customers to have their meals. Each stall has its own name and is equipped with colorful lamps, a refrigerator, water supply, a sink, and a kitchen. Each stall is manned by 1-2 sellers who take orders and make the meals ready for customers during the operating hours. Each stall takes care of its own customers and eating utensils, such as spoons, forks, plates, and tissue.

b) Catering Services

All food stalls at the canteen operate in a self-service arrangement, so customers take their meals away after ordering. Breakfast, snacks, and lunch are served daily at the canteen. Drinking water and electricity are also provided by the school for cooking and storing food.

c) Commitment and Management

The school management committee, led by the school principal and vice principals, frequently monitors the quality and nutritional value of all cooked foods at the canteen by referring to the specifications in the guidebook issued by MoEYS. The school principal and vice principals also interview students and teachers as customers about the food quality and the canteen hygiene. The school management team checks whether the activities of each food stall adhere to the activity items specified in the contract. Aside from the school principal and vice principals, the school canteen management committee consists of teachers, parent representatives, and student representatives. They hold regular meetings to oversee the operation and areas needing improvements at the school canteen.

d) Major Challenges

The school's annual operating budget from the government does not include the management of the school canteen. The school canteen is, thus, managed by private contractors who rent the space. The rent budget is used for the school's development. Canteen dishes are sold at relatively low prices considering that most of the students belong to low-income families. Because of the limited profit they earn from selling their dishes at low prices, vendors cannot also afford to hire professional cook to look after the quality and the nutritional contents of the dishes.

The teachers prefer to eat out because they want to have more nutritious and delicious foods. The way the canteen is managed is traditional, rather than creative or attractive to customers.



Figure 1: School canteen frontage with its name.

Best Practices of the School Canteen

a) Offering Affordable Foods

The prices of food items sold at the canteen are lower than the market prices, costing around USD 0.25 for each item, because the canteen was established for the purpose of supporting and helping students belonging to poor households surrounding the school. The price set for students is cheaper than the price set for teachers as prescribed by the school management. Despite earning limited profits, the vendors continue to sell affordable dishes to help students to save money and encourage them to eat food at school.

b) Offering Special Foods and Prices for Disabled People and According to Religious Beliefs

All meals are sold free of charge to disabled students in compliance with the government's policy on inclusive education (MoEYS, 2018). Most of the students and the communities around the school adhere to Islam faith, so they cannot eat pork. The school respects their religious beliefs, thus, all of the food vendors only sell fish, beef, vegetables, and lentil products every day.

c) Managing Canteen Wastes

Each food vendor has to manage their wastes properly by taking them to the school's disposal yard. The vendors are expected to keep the canteen environment clean as indicated in their contract. The school also encourages less use of plastic in packing foods thus most of the vendors use paper sheets and banana leaves instead.

d) Students and Teachers Processing Food

The school produces processed and fermented foods, jams, vegetables, fruit, fish, and meat, and the activities are managed by students. These processed and fermented foods are consumed by and sold to the food vendors at reasonable prices, and the profits earned are used to operate the canteen, especially to provide affordable foods for students. For example, packed soy bean juice is produced by a team of technical education students. Some profits from the canteen rent are also used for the school development, such as renovating the school's fences and buildings and buying vegetable seeds for cultivation and chicken to be raised in the upcoming season. Even though the surrounding communities adhere to Islam, not all students and teachers are Muslim. All of these are operated and managed by technical education teachers and students.

Plans to Sustain School Canteen Operations and Its Best Practices

The canteen needs a strong commitment from the school management team to: 1) require each vendor to develop a specific menu for their respective food stalls different from the others to provide more food options to the customers; 2) put more colorful and attractive decorations on each stall; 3) enhance the food preparation and canteen operation guidelines to ensure food safety and hygiene; 4) select school canteen ambassadors from among the students to promote the canteen activities; and, 5) collaborate and partner with local food retailers and wholesale food suppliers to ensure food availability. The school hopes that the canteen will live up to its name, *Samarky*, which means “collective action from all stakeholders”.

2. Private General and Technical High School of Saint Francois

The school is a private school located in Takeo Province, managing 33 technical education teachers and 145 students. The school's vision emphasizes students' development, and it says “They have life and live it to the fullest”. The school canteen was established in 2019. The school has a green environment (Figure 2), with fruit and vegetable gardens.



Figure 2. School environment.

Brief Descriptions of the School Canteen and Its Challenges

a) Physical Infrastructure and Facilities

The canteen can accommodate 100 customers at one time on a daily basis. It is equipped with armed chairs and round and rectangular tables. Each table can sit 10 people with armed chairs. Table cloth, plates, and a pack of forks and spoons are readily available for customers to use. The environment is airy, fresh, and peaceful. Th canteen is easy to locate within the school and receive minimal noise around it. It has a separate entry and exit door going to and from the rubbish pile and latrines.

b) Catering Services

Students volunteer to be waiters and waitresses to serve their peers during meal times. Most students stay and eat food at the school canteen through a scholarship scheme in a self-service system. Some students majoring in Hotel Management and Hospitality render services to the canteen as cooks, waiters, and waitresses. All foods sold at the canteen are nutritious, healthy, and hygienic. The school canteen is open to students, teachers, personnel, and administrators (Figure 3).



Figure 3. Customers having lunch at the school canteen.

c) Commitment and Management

The school canteen's management committee regulates all activities to ensure that everything is safe and healthy for customers. The school principal checks the services provided and tastes each dish on a regular basis to ensure food safety and hygiene. The committee regularly meets to check the progress and concerns of the canteen to provide immediate solutions. This regular monitoring of the school canteen operation is done because officers from the Ministry of Education frequently take their meals there.

d) Major Challenges

The limitation of the canteen is that it is open only to students, teachers, and administrators who work for the school. It is not open to the general public. The canteen is run and operated using the school's budget, with no cooperation with any external stakeholders. The canteen does not generate much profit from the school community as customers since nearly 90 percent of students come from a low socio-economic background and have low purchasing power.

Best Practices of the School Canteen

a) Involving Students in Canteen Operation

Homeroom teachers assign their students to assist in canteen work on a voluntarily rotated basis each week. They volunteer to be waiters/waitresses, cooks, janitors, and stewards. Their teachers and the school canteen's committee members oversee these voluntary engagements of the students and ensure that their academic responsibilities and activities are not affected.

b) Designating the Canteen as an Information Sharing and Learning Site

The school frequently organizes educational and special events for teachers and students, such as Christmas or New Year parties to build a friendly environment (Figure 4). A healthy food environment influences people's food decisions by developing healthy eating habits (Mensink, Shewinghammer, & Smeets, 2012). The canteen functions as an appropriate place for students, teachers, and the school management team to exchange information about improving their knowledge and skills related to their fields of study and career paths.



Figure 4. Examples of foods served at the school canteen during special occasions.

Some students who major in Tourism and Hotel Management practice their culinary and service skills at the school canteen (Figure 5). They are required to behave professionally as cooks/chefs, waiters, waitresses, janitors, and stewards and to wear their professional uniforms appropriately.



Figure 5. Simple table setting arranged by students for customers of the school canteen.

c) Conducting Charitable Activities by Using Canteen's Profits

The school shares the profits gained from the canteen for charity purposes. Although not regular, the donation is part of the canteen's social contribution to the communities surrounding the school during hard times. For example, during the city's lockdown period for two weeks in April 2021 due to the outbreak of COVID-19 pandemic, the school donated rice, vegetables, fruit, fish, pork, and beef to vulnerable people who lived in the affected areas.

d) Ensuring Food Sustainability

To ensure food supply and sustainability for the canteen operation, the school does the following: 1) Cultivating rice, vegetables, and fruits; 2) raising fish, pigs, cows, frogs, and chickens; and, 3) producing a variety of canned/packed foods, including processed beef, processed basil balm, and citronella balm. The food processing is also aimed at applying the theories in textbooks into practice to enhance students' hands-on skills.

Plans to Sustain School Canteen Operations and its Best Practices

The school plans to expand the canteen to accommodate more customers. The school plans to send two technical education teachers to enroll in training courses on culinary and hospitality as part of their professional development towards improving the canteen services. Moreover, the school is expanding its restaurant services to a resort establishment called *Phnom Vor* to cater to more customers and also to be an internship venue for its students. Given the increased number of the school's graduates annually, the school plans to build a resort that will employ former students right after their graduation.

3. Don Bosco General and Technical Private High School of Poi Pet

This private school offers technical and general streams at the upper secondary level. Established in 2004, the school is located in Poi Pet City, Banteay Meanchey Province and has 141 students and 35 teachers. The school's vision is to develop human resources with knowledge, skills, and attitude relevant to national development.

Brief Descriptions of the School Canteen and its Major Challenges

a) Physical Infrastructure and Facilities

The canteen is strategically located inside the school and is easily accessible to customers. The school canteen's operation has been supported technically and financially by Don Bosco Foundation. The kitchen and logistics are tidy and kept orderly. The canteen occupies a big hall in an airy and brightly-lit environment. Long tables with chairs are available for customers. The kitchen, food order counter, and sinks are in separate locations to ensure hygiene and sanitation.

b) Catering Services

It is a self-service canteen that offers three meals a day for students, teachers, and administrators. During meal times, all customers are required to bring their own spoons and forks that were once provided by the school. The canteen also provides plates, trays, and bowls.

c) Major Challenges

The canteen does not have a professional cook. Instead, the school employs two village cooks to prepare foods for hundreds of customers daily because of budget constraints.

Best Practices of the School Canteen

a) Shared Responsibilities among students in maintaining hygiene and sanitation in the canteen

After eating their food, all customers are required to bring plates, trays, and bowls to the sinks to do the dishes themselves. Then they have to put the utensils under the sunlight to sterilize them. The school provides washing soap and dish scrubbers as well as clean water at the sinks (Figure 6).

The dish-washing process is under the inspection of another team of students who will supervise the level of cleanliness and hygiene. The canteen's tables and chairs are cleaned three times a day by a team of students in a rotated turn weekly from grade to grade (Figure 7).



Figure 6. Students wash their plates and utensils in a designated wash area in the school canteen.



Figure 7: Canteen space.

b) Offering Nutritious, Healthy and Safe Foods

The school only allows the selling of foods and ingredients which meet the requirements set in the guidelines and regulations from MoEYS on school health to ensure food safety and quality for customers. The guidelines specifically restrict the selling of salty and sweet foods. A technical team from MOEYS school health department

inspects and monitors the implementation according to the guidelines and regulations to ensure that the school management team regulates and manages it properly. If any food is not cooked well, it is forbidden to be sold to students and other members of the school community. All left-over foods (e.g., vegetables and meat) are stored properly in the refrigerator. Some foods can be reserved for particular students or teachers upon requests, such as porridge for sick students.

c) Delivering Canteen Services Orderly

Students and other customers will be queuing in two rows (one for females and another one for males) on specific time schedules. For example, primary school students are required to queue at 11.00 AM, while secondary school students (lower and upper) will line up at 11.30 AM. This is to avoid overcrowding inside the canteen. Three meals are served at particular times, namely breakfast at 7.00-7.30 AM, lunch at 11.00 AM-12.00 PM, and dinner at 6.00-6.30 PM on weekdays.

d) Managing Wastes Properly

A rubbish bin is put in every corner of the canteen for easy access of the students to dispose their litter conveniently. The school practices sorting and packaging of wastes for recycling purposes. A team of students will take the rubbish bins out three times a day to avoid bad smells inside the canteen, which can affect the quality and hygiene of the foods sold.

e) Engaging in Agricultural Production for Food Sustainability

To ensure food sustainability, the school has a huge area for vegetable, fruit and animal production. The school grows rice and raises animals, such as pigs, cows, fish, and chickens to supply the canteen with its daily needs. The school solicits donation and support from the alumni association to maintain the production activities and the operation of the school canteen.

Plans to Sustain School Canteen Operations and Its Best Practices

The school plans to upgrade the canteen to be more modern to accommodate more customers by seeking financial support from donors. Old utensils and facilities will be replaced by new ones gradually through the donation and support to be gathered from the surrounding community.

4. General and Technical High School of Puok

It is a public school located in Siem Reap Province. It has 186 teachers and 3,999 students as of 2021. The school's vision is to be the community's resource which necessarily focuses on promoting a conducive environment, morality, learning, and teaching to ensure effective and quality education. The school canteen was established in 1990.

Brief Descriptions of the School Canteen and its Major Challenges

a) Physical Infrastructure and Facilities

The school build food stalls to be rented to villagers who live in the area surrounding the school under a set of regulations formulated by the school management team. The canteen's environment is peaceful and attractive, with colorful lighting, clean tables and chairs, and electric fans, and is decorated with fresh flowers and plants. Food vendors are allowed to decorate the food stalls themselves in different styles to enhance the overall canteen environment (Figure 8).

b) Catering Services

The canteen serves breakfast and lunch for the students and teachers. The most popular meal of the day is breakfast. The food vendors offer delicious and reasonably priced foods than the foods sold by vendors outside the school. This makes the canteen vendors preferred by most students and teachers. Overall, the canteen is convenient to both students and teachers.

c) Commitment and Management

The school principal appoints canteen ambassadors to disseminate relevant information to students and teachers during morning roll calls or hall meetings. The school canteen ambassadors are appointed formally in order to increase public awareness on the services of the school canteen and prevent the students and teachers from buying foods outside of the school.

d) Major Challenges

Food vendors individually set prices of foods they sell that are still affordable to customers but in competition with each other to gain patronage from students and teachers. Different food stalls offer foods with varying taste and quality which the school management has difficulty to regulate including the food prices.



Figure 8: The school canteen is a long stretch of stalls rented by different vendors.

Best Practices of the School Canteen

a) Offering Quality and Affordable Foods

Students and teachers appreciate the quality of foods (in terms of nutritional value and taste) sold at the school canteen at reasonable prices, with fast and hygienic services. The school management team frequently calls for a meeting with vendors to ensure the quality and hygiene of their foods they sell to the school community by comparing them to the guidelines issued by MoEYS and in line with the contracts they have signed with the school. In terms of hygiene and sanitation, the school management and the vendors ensure that there is no rat, fly, or other disease-transmitting insect at the canteen by daily cleaning the canteen premises. The school keeps up with the slogan that says “Health is the first priority for humans”.

b) Establishing Close Relationships between Canteen Vendors and Customers

The school nurtures close relationships between canteen vendors and customers. The school has a suggestion box for students and teachers to provide feedback to the vendors, particularly regarding the food quality and hygiene in the operation of their respective stalls. The school also promotes a share-a-seat arrangement that does not distinguish customers — be it students, teachers, or the school management team members, to enhance a sense of community and create a user-friendly canteen environment.

c) Practicing Proper Waste Management

The school provides rubbish bins near each table for easy access of canteen customers to dispose their wastes. Food vendors have to bring home all of the recyclable wastes from their daily operation. The school implements a strict regulation prohibiting littering.

d) Using Canteen Profits for School Development

All profits generated from the canteen are used for school development in terms of maintenance activities and instruction delivery. The school has formed a canteen regulation committee by involving representatives from the school management team, teachers, students, and parents to execute this practice. Every profit use is reported to all stakeholders.

Plans to Sustain School Canteen Operations and its Best Practices

The school plans to build more stalls in response to the annual increase in the number of students. Food vendors will be required to introduce more healthy food options to meet the customers' needs. The school also plans to have more frequent meetings between the school canteen committee and food vendors to discuss challenges and solutions to improve canteen services.

5. Primary School of Watbo

It is a public primary school (Grade 1-6) located in Siem Reap Province. It has 128 teachers and 5,971 students as of 2021. The school's vision is to develop children with high-quality education, good health, and responsible attitude. The school canteen was established in 1997.

Brief Descriptions of the School Canteen and Its Major Challenges

a) Physical Infrastructure and Facilities

The school canteen has the equipment to regularly sterilize all utensils. In addition, the school canteen is equipped with chairs, tables, kitchen, cupboards, cooking rags, and other facilities, all of which are maintained properly to ensure hygiene and cleanliness. The canteen stalls were constructed using the school's budget supported by the school's community members. The canteen is decorated with colorful lighting and electric fans. The food stalls are numbered in order to be easily recognized by customers. The school canteen's environment is always kept clean (Figure 8).

b) Catering Services

The school canteen offers reasonably priced food items costing about 0.4 USD, which is more affordable for children than the food items sold by the stalls outside of the school which usually range between 0.8 USD and 1.00 USD. The canteen vendors are friendly and welcoming to customers (Figure 10). The canteen caters to not only students and teachers but also to the school visitors.

c) Commitment and Management

All processed foods, such as canned, packed, and fermented products, are inspected regularly in terms of expiry dates and their physical appearance by the school canteen's management committee and officers from the Provincial Department of Public Health. The school canteen's management committee is led by the head and vice head in

regulating the canteen activities. To avoid competition among vendors, the school determines the food items to be sold by each of them.

d) Major Challenges

The school management cannot have full control of the prices set by the food vendors on the food items they sell in their respective stalls.



Figure 9. The school management inspecting the canteen set up.

Best Practices of the School Canteen

a) Maintaining a Hygienic Environment and Offering Nutritious Foods

Most students and teachers prefer to have meals at the school canteen because of its hygienic environment and for the delicious, nutritious, and safe foods sold there. The foods are cooked well, containing balanced ingredients. All food items and dishes are displayed on the shelves neatly without any insects spotted. All left-over foods are properly stored in the refrigerator for consumption on the next day. All food vendors follow the guidelines issued by MoEYS. They also wear uniforms and practice proper hygiene and sanitation (Figure 10).

b) Adopting Proper Waste Management

The school canteen's wastes are managed properly. The school provides rubbish bins in all corners of the canteen. Each type of waste, such as plastic, glass, food waste, and cans, has a specific bin. The student councils have also been assigned to monitor if the waste is managed properly by vendors.



Figure 10. A vendor wears a prescribed attire in her stall and with food and drinks neatly displayed for her customers.

c) Engaging Students in Canteen Activities

The school's student councils are tasked with overseeing all canteen activities, including communication and interaction between vendors and customers. There are three types of student councils involved, namely the school scout council, youth council, and red cross council. They assist in all school canteen activities in a rotated turn. These are extra-curricular activities that students can do to support their school.

d) Involving Parents and Other Community Groups

The school received the Best School Award so that the parent association provides full support to all school activities financially and technically, including for the operation of the school canteen. The school also involves other community groups to support the canteen's operation. The school has formed a support committee engaging parents and the surrounding communities to help and give both technical and financial support for the school. They conduct regular meetings to discuss challenges and issues faced by the school (Figure 11).



Figure 11. Members of the school community visit the school to offer support.

Plans to Sustain the School Canteen Operations and Its Best Practices

The school plans to upgrade the canteen to be more functional in terms of its facilities and kinds of food to be sold. The school will add more chairs and tables to accommodate more customers and will require the vendors to have an appropriate menu to provide more food options for the customers. The school hopes that the canteen can provide a more conducive environment to students and teachers for learning and socialization while eating their meals and snacks.

Lessons Learned and Recommendations

A. Lessons Learned

From the best practices shared by the schools, here are some of the lessons learned in implementing a healthy school canteen:

1. School Policy
 - a. The costs of the foods can be set to be affordable or lower than the market costs to support students and teachers.
 - b. Food items should be displayed in the most hygienic ways and be clearly visible to customers from a distance.
 - c. Food items provided shall be nutritious, delicious, and healthy, containing essential proteins and vitamins, in compliance with the guidelines and regulations issued by MoEYS on school health.
 - d. Some food items, such as meat, vegetables, fruit, canned and processed food/ vegetables/fruit/ meat, fish, and rice, can be home-grown or produced by schools to ensure canteen sustainability.
 - e. Food vendors can cater to different cultural and religious affiliations of the customers.
 - f. Only cooked foods/meals should be sold to the school community members to ensure freshness and safety.
 - g. Environmentally-friendly food packaging materials, such as paper sheets and banana leaves, can be used to replace plastic wrap.
2. Canteen Management
 - a. Maintaining a peaceful and clean canteen environment makes it a good venue to conduct various activities for students and teachers, including meetings and special events.
 - b. Canteen wastes can be managed properly to ensure a hygienic environment at schools in cooperation with food vendors and the school community members.
 - c. Loyalty and honesty among students and vendors will lead to a creation of a friendly environment at school.
 - d. Students and teachers can be involved in cooking, inspecting, and serving foods as well as cleaning of the school canteen.
3. Training and Education
 - a. Schools can hold intensive courses or special lectures on food safety and eating habits as part of extra-curricular activities for students.
 - b. Awareness-raising campaigns on the importance of eating school canteen food can be conducted school-wide.

4. Canteen Supervision and Partnership

- a. There should be a school canteen management committee to regulate the canteen's daily operation to ensure the availability of nutritious, safe, and healthy food items for customers. This Committee must see to it that food vendors satisfy the bidding requirements and have proven capacity to operate a food stall well according to the contract. The Committee must also address the needs of the food vendors.

B. Recommendation

From the aforementioned lessons learned, the following are the recommendations to help improve the implementation of healthy school canteens in Cambodia:

1. For the Government

- a. The provision of resources and support should be increased, such as canteen operational budget, food and nutrition experts/specialists, and specific school canteen policy formulation.
- b. Awareness-raising campaigns on the school canteen should be disseminated nationwide through social media to relevant stakeholders to encourage engagement and partnership opportunities.

2. For Schools

- a. The school management team should devise school canteen policies and regulations and implement them strictly following the guidelines and policies issued by the ministry in charge.
- b. The school management team, teachers, and students should be involved actively in running and managing the canteen, such as setting affordable prices, cleaning the canteen facilities, checking and inspecting the level of cleanliness and sanitation, decorating the canteen's environment, promoting the canteen services, and ensuring that the meals are healthy, nutritious, and hygienic.
- c. To ensure and sustain healthy and nutritious foods, the school management team should raise and grow some food sources such as vegetables, fruits, animals, and grains.
- d. School culture and core values on friendship, collaboration, mutual trust, loyalty, and integrity should be built among teachers and students towards maintaining a healthy school canteen.
- e. The cooks and vendors should consider special diets for particular groups of people in terms of their religious affiliation, health conditions, and other sociocultural backgrounds.

VII

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Indonesia

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Geographic and Sociodemographic Information

Indonesia is the world's largest archipelago, comprising more than 17,000 islands stretching over 3,181 miles along the equator between the Pacific and Indian Oceans. With a land area of 1.92 million square kilometers, Indonesia has a population density of 141 people per square kilometer (BPS-Statistics Indonesia, 2021). The capital city of Indonesia is Jakarta, which is located in Java Island. Indonesia currently consists of 34 provinces, 416 districts, 98 cities, and 7,094 sub-districts (Ministry of Home Affairs, 2017).



Figure 1. Map of Indonesia
Source: <https://www.freeworldmaps.net/asia/indonesia/>

Indonesia is the world's fourth most populous country with approximately 270.20 million people, with population growing at a rate of 1.25 percent per year (BPS-Statistics Indonesia, 2021b). The current sex ratio in Indonesia is 102 men for every 100 women. The proportion of the productive age (15-64 years old) is 70.72 percent, while the proportion of 0-14 years old is 28.33 percent. Life expectancy at birth is about 72 years, with a fertility rate (total births per woman) of 2.3. The under-five mortality rate per thousand live births is 24 (World Bank, 2021).

The population of Indonesia is still concentrated in the island of Java, with around 151.59 million people. Although its geographical area covers only about seven percent of Indonesia's total territory, Java Island is home to 56.10 percent of the country's population. Sumatra Island, with a population of 58.56 million people, has the second highest population distribution at 21.68 percent. Meanwhile, the rest of population distribution is 7.36 percent for Sulawesi Island, 6.15

percent for Kalimantan Island, and 5.54 percent for the areas of Bali - Nusa Tenggara, and 3.17 percent for Maluku-Papua. This indicates that the most populated areas are Indonesia's western regions (BPS-Statistics Indonesia, 2021b).

The country's official language is Bahasa Indonesia and serves as the lingua franca primarily in commerce, administration, education, and the media. Thus, nearly every Indonesian speaks the language to varying degrees of proficiency. However, there are more than 700 distinct languages and local dialects spoken in Indonesia.

There are about 1,300 recognized ethnic groups in Indonesia. The largest ethnic group is the Javanese, which makes up about 40 percent of the total population. The Javanese people are concentrated on the central and eastern parts of Java Island, but millions have migrated to other islands throughout the archipelago because of the transmigration program. The Sundanese people are the second largest group and are living in the western part of Java Island. Batak, Madurese, Betawi, Minangkabau, Bugis, and Malay people are the next largest groups in the country.

Indonesia guarantees freedom of religion or belief for its population. There are five religions officially recognized by the state, namely: Islam, Christianity, Hinduism, Buddhism, and Confucianism. The majority of the population (86.70%) are Moslem making Indonesia as the country with the largest Muslim population in the world. Christianity (Protestant and Catholic) is mostly embraced by several tribes, such as Batak, Toraja, Dayak, Nias, Minahasa, and Ambonese. Most Hindus are Balinese and people of Indian descents in Indonesia, while most Buddhists and Confucians are Chinese-Indonesians.

The World Bank's data shows that based on its Gross National Income (GNI) per capita, Indonesia is included in the group of lower-middle-income countries, with a GNI of 3,870 US dollars in 2020. This condition is a backward movement from the earlier year, during which Indonesia's GNI per capita reached 4,050 US dollars and the country was classified into the upper-middle-income country group (World Bank, 2021b). More than 30 percent of the country's labor force works in the agricultural sector, which is low in productivity and contributes only about 14 percent to per capita Gross Domestic Product (GDP). Meanwhile, manufacturing's share of the economy accounts for 30 percent of per capita GDP. Indonesia's manufacturing exports are dominated by commodities and simple manufacturing products, primarily garments. In 1970, Indonesia's exports were dominated by commodities, mainly rubber and oil. The composition is not much different today, with exports still being dominated by commodities such as palm oil and coal (UNESCO Statistics Institute, 2018).

According to UNESCO's data, the literacy rate in Indonesia in 2018 for males and females aged 15 years and above was 97.3 percent and 94 percent, respectively, while the literacy rate for the population aged 15-24 years was 99.7 percent. Children aged 7 years could expect to receive 12.98 years of education in 2020, which is nearly equivalent to the length of time required to complete education up to the Diploma I level (UNESCO Statistics Institute, 2018). Referring to UNDP's 2019 data, Indonesia ranked 107th out of 189 countries in Human Development Index (HDI) with the value of 0.718. This value rose from 0.523 in 1990, notching an increase of 37.3 percent. Based on reviews of Indonesia's progress in each of the HDI indicators, life expectancy at birth increased by 9.4 years, mean years of schooling

increased by 4.9 years, and expected years of schooling increased by 3.5 years. Indonesia's GNI per capita also increased by about 172.7 percent between 1990 and 2019 (UNDP, 2021).

Since 2001, Indonesia has officially implemented a decentralization policy in the government system. The territory of Indonesia is divided into autonomous provinces, districts, and cities. Districts and cities have the same level of government but differ by type, whether rural (district) or urban (city). Within a district or city, there are several sub-districts, which are smaller administrative units of government. Each sub-district is further divided into villages. Villages in rural areas are called *desa*, while in urban areas they are called *kelurahan* (Figure 2) (President of Republic Indonesia, 2014). This multilayer governance does have influence on local focus, commitment, and the coordination of development programs. On education management for instance, higher education is the responsibility of the central government, while secondary and primary education is under the authority of provincial and district/municipal governments, respectively based on Law No. 23/2014.

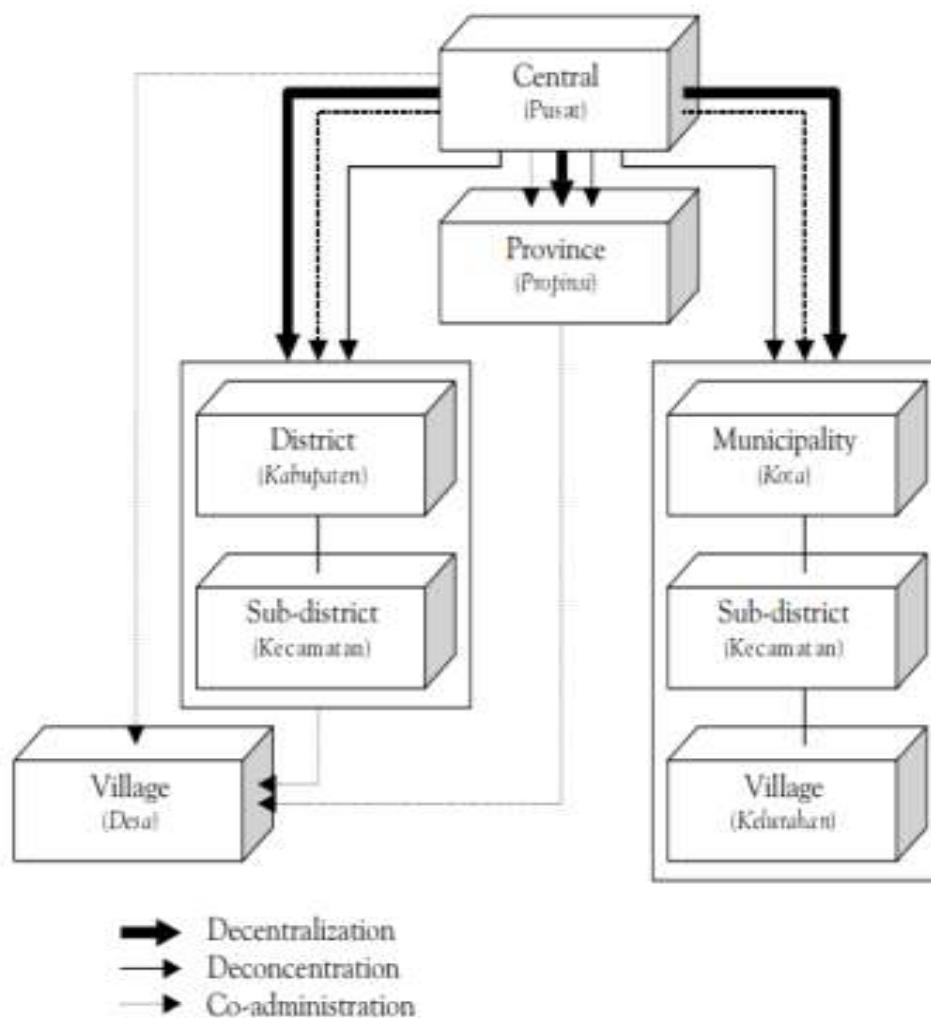


Figure 2. Framework of government according to law No. 23/2014.

Decentralization has also affected alignment across different levels of the health system, with separate responsibilities between the central, provincial, and district governments. For instance, the Ministry of Health is responsible for managing some tertiary and specialist hospitals, providing strategic directions, setting standards, issuing regulation, and ensuring the availability of financial and human resources. Provincial governments are responsible for managing provincial-level hospitals, providing technical oversight and monitoring of district health services, and tackling cross-district health issues within their respective provinces. District/municipal governments are responsible for managing district/ city hospitals and the district's public health network of community health centers (*Puskesmas*) and associated subdistrict facilities. There is a range of private providers, including networks of hospitals and clinics managed by not-for-profit and charitable organizations, for-profit providers, and individual doctors and midwives who engage in the dual practice (i.e., running a private clinic as well as taking a public facility role) (UNESCO Statistics Institute, 2018).

II

Overview of Educational System

Following its independence in 1945, Indonesia constitutionally enshrined education as a right of all Indonesian citizens to establish a more egalitarian and inclusive mass education system (Usman, 2021). Indonesia has a complex and diverse educational system. There are more than 60 million students and nearly 4 million teachers teaching at 340,000 educational institutions. This makes Indonesia the third largest educational system in Asia and the fourth largest in the world (after China, India, and the United States) (OECD/Asian Development Bank, 2015).

Indonesia's National Educational System is regulated in Law No. 20 of 2003. Education in Indonesia is based on Pancasila and the 1945 Constitution, which is rooted in religious values and Indonesian national culture, and is responsive to the changing demands in different eras (President of Republic Indonesia, 2014, 2003). Education in Indonesia is compulsory and free for students at government-funded public schools from grade 1 through grade 9 (six years of elementary education and three years of junior secondary education) (Nuffic, 2017). Two ministries are responsible for managing the primary and secondary educational system, with 84 percent of schools under the Ministry of Education, Culture, Research and Technology (MoECRT) and the remaining 16 percent under the Ministry of Religious Affairs (MoRA). The MoECRT manages general public schools from primary (elementary) schools, junior and senior secondary high schools, to vocational high schools. Meanwhile, MoRA organizes religious schools (mostly Islamic schools), such as *Madrasah Ibtidaiyah* (Islamic primary schools), *Madrasah Tsanawiyah* (Islamic junior high schools), and *Madrasah Aliyah* (Islamic senior high schools). In addition, the private sector plays an important role in the education system through general private schools, modern religious (mostly Islamic) schools, and boarding schools (*Pondok Pesantren*). Data shows that about seven percent of primary schools are being privately managed, and this share is much higher for junior secondary schools (56%), senior secondary schools (67%), and Islamic schools (95%) (MoECRT, 2013). As regulated in Law No. 23 of 2014 concerning local governments, basic education matters are within the authority of the district/city governments, senior secondary education is under the responsibility of the provincial governments, while the central government is liable for tertiary education.

Figure 3 describes the education system in Indonesia (MoECRT, 2013). The official enrolment age for primary school is seven years old, but many students begin at the age of six. Before beginning elementary school, children can attend non-compulsory pre-schools offered by private kindergartens and daycare centers, as well as public early childhood education providers. Students attend elementary education for six years (grades 1-6).

Age	School Year	Education Level	Education Delivery	
			Decentralised	Centralised
Above 22	23	Higher Education		Doctoral (includes general & Islamic, and vocational, academic & professional)
	22			Master (includes general & Islamic, and vocational, academic & professional)
	21			
	20			
	19			
	22			
	18			
	21			
	20			Undergraduate (includes general & Islamic, and vocational & academic)
	19			
18	14	Secondary Education	General senior secondary & vocational senior secondary (SMA & SMK)	Islamic general senior secondary & Islamic vocational senior secondary (MA & MAK)
	17			
	16			
15	11		Junior secondary (SMP)	Islamic junior secondary (MTs)
	14			
	13			
12	8	Basic Education	Primary (SD)	Islamic primary (MI)
	11			
	7			
	10			
	6			
	9			
9	5			
	4			
8	4			
	3			
6	2	Early Childhood Education	Kindergarten (TK)	Islamic kindergarten (RA)
	5			

Figure 3. Indonesia's educational system

Source: Ministry of Education, Culture, Research, and Technology, 2013. Overview of the Education Sector in Indonesia - Achievement, and Challenges.

Lower or junior secondary education culminates after three years (grades 7-9), and students are then awarded with a certificate of completion. Students who have graduated from a junior secondary school and achieved sufficient grades can enroll at either a general academic senior secondary school or a vocational upper-secondary school. Senior secondary education is neither compulsory nor free at the moment. It lasts for three years (grades 10-12) and is available in a variety of majors within the general academic track. The majors offered by general senior secondary schools are languages (Indonesian, English, and other foreign languages), natural sciences (biology, chemistry, and physics), and social sciences (sociology, economy, and geography). Students in religious schools specialize in religious subjects. For admission to Indonesian higher education institutions, a senior secondary school certificate is the minimum entry requirement (MoECRT, 2013).

The higher education degree structure in Indonesia ranges from bachelor to doctoral levels. Graduate-level specialization programs in professional fields, such as medicine, are also available, as well as four levels of vocationally oriented diploma programs (D-I to D-IV) (Nuffic, 2017). The academic year runs from July to June, with a break in December and during the Islamic Eid Holiday. University academic calendars are typically divided into two semesters and run from August/September to May/June. Some colleges and universities may offer an additional summer semester from June to August.

III

Overview of Malnutrition, Food, and Healthy Diet Practices among School-Age Children and Adolescents

Indonesia is currently dealing with the triple burden of malnutrition owing to the coexistence of undernutrition, overnutrition, and micronutrient deficiencies (UNICEF, 2021). Problems of maternal and child health, nutrition, and communicable diseases persist, while non-communicable and chronic diseases are emerging as new priorities (UNESCO Statistics Institute, 2018).

The nutritional status of school-age children and adolescents can be described based on the age groups of 5-12 years old, 13-15 years old, and 16-18 years old. The most common nutritional problems for school-age children and adolescents are stunting (low height for age), wasting (low body mass index for age), and excessive body weight or fatness (high body mass index for age) (NIHRD MOH, 2018).

Table 1 shows that the prevalence of stunting in children aged 5-18 years is greater than 20 percent and increases with age (23.6%, 25.7%, and 26.9% for children in the age group of 5-12 years old, 13-15 years old, and 16-18 years old, respectively). More than eight percent of school children have experienced thinness or wasting, manifested by low weight for height. Primary school children (5-12 years old) have the highest prevalence, followed by middle and high school children (at 9.2%, 8.7%, and 8.1%, respectively). The problem of overnutrition is also common. Incidents of overweight and/or obesity exist among elementary (20%), junior (16%), and senior (13.5%) high school children (NIHRD MOH, 2018). In addition, about 29 percent of 5-12-year-old children and one-fourth of Indonesian adolescent girls have below-par hemoglobin levels. The onset of anemia in school-age children can lead to physical growth and development disorders, low resistance to diseases, poor intelligence, and poor academic/work performance (NIHRD MOH, 2013).

Table 1. Prevalence of Nutritional Problems among School-Age Children and Adolescents in Indonesia.

Age Group	Stunting (%)			Wasting (%)			Fatness (%)		
	Stunted	Severely Stunted	Total	Wasted	Severely Wasted	Total	Overweight	Obese	Total
5-12 years old	16.9	6.7	23.6	6.8	2.4	9.2	10.8	9.2	20
13-15 years old	18.5	7.2	25.7	6.8	1.9	8.7	11.2	4.8	16
16-18 years old	22.4	4.5	26.9	6.7	1.4	8.1	9.5	4	13.5

Source: National Basic Health Survey, 2018.

Several studies suggest that the triple burden of malnutrition among school-age children and adolescents is related to poor dietary habits and sedentary lifestyles (Popkin et al., 2020; Mahmudiono & Segalita, 2019; Agustina et al., 2020). The diet quality and diversity of Indonesian school children was discovered to be poor (Agustina et al., 2020), with only 25 percent of them consuming food sources rich in iron, folate, and other essential micronutrients, such as animal-based foods and vegetables. Furthermore, about 20 percent of school children eat ready-to-eat food, and 14 percent eat homemade local snacks; also, 84 percent of them drink sugary drinks regularly. As a result of these consumption choices, less than half of the teens consume only 5 or more of the 11 food groups recommended for diverse consumption (UNICEF, 2021).

A low consumption of fruits and vegetables is common in school-age children's diet (NIHRD MOH, 2018; Maehara et al., 2019), aside from their frequent unhealthy snacking behaviors (UNICEF, 2021, Maehara et al., 2019). Two-thirds (66%) of the adolescents surveyed consumed processed foods as snacks, while one-third consumed cakes, pastries, fried foods, and crackers. Although children and teenagers eat three meals a day on average, only half of them ate breakfast at home, with the other half purchasing food at a stall or school. Their lunch was typically a ready-to-eat meal purchased at a food stall and often included a sugary drink (UNICEF, 2021).

The findings mentioned above highlight the importance of improving dietary quality and diversity in a regular meal pattern, especially meal frequency and meal skipping, to reduce the risk of malnutrition among school-age children and adolescents (Agustina et al., 2020).

Moreover, the majority of the surveyed adolescents were found to be physically inactive; they engaged in moderate activity for less than 150 minutes per week, while they watched television for at least 2 hours per day (Maehara et al., 2019). Adolescents' lifestyles are changing as they become more connected to the internet. The majority of teenagers travel by motorcycle and spend little time walking, cycling, or exercising. Physical activity at school was also minimal, rarely lasting more than 90 minutes per week. Dinner is mostly prepared at home but rarely taken together as a family. Likewise, dinner is increasingly held in front of the television, replacing the traditional practice of eating together (Agustina et al., 2020).

Individual knowledge on balanced diet, household food security, and socio-economic status (SES), as well as a relevant policy landscape and food system are factors contributing to the eating and physical activity behaviors of the population (Mahmudiono & Segalita, 2019). The lack of awareness of the importance of nutrition for school-age children and adolescents seems pervasive among all stakeholders. Personal preference and availability are the main drivers of the students' food choices (Rachmadewi et al., 2021).

Scientific evidence suggests that adolescence provides a second window of opportunity to influence developmental trajectories (including growth and cognitive development), form future habits, and make up for some poor childhood experiences (UNICEF, 2021).

Improving school food policies and programs is an important option for improving school children and adolescents' nutrition. Integrated school-based nutrition programs can address the triple burden of nutrition problems and can be used to develop and incorporate ongoing nutrition interventions (Rachmadewi et al., 2021). Schools can serve as a point of entry for parents and the community. Furthermore, school food standards are effective in increasing the availability and purchases of healthy food, while decreasing the purchases of unhealthy food at the same time (UNICEF, 2021).

A. Current Conditions of School Canteens

The school canteen is one of the important facilities for school to support the teaching and learning process of enabling students to know about proper nutrition and practice a healthy eating lifestyle. However, many schools in Indonesia do not have a canteen, and those with canteens still do not comply with the healthy canteen standards in terms of facilities and foods sold (MoECRT, 2020). Data by the National Food and Drugs Agency of Indonesia in 2019 shows that 20.1 percent of foods consumed by school children did not meet the criteria as they contained *Escherichia Coli*, cyclamate, borax, coloring agents, *Staphylococcus aureus*, and formalin (BPOM, 2019).

The limitations faced by schools without a canteen are generally related to a lack of land, funds, and human resources. Due to limited land and funds, many schools construct a semi-permanent structure as a school canteen. Meanwhile, schools with substandard canteens generally experience problems related to a weak management, a lack of training for canteen managers/food handlers/vendors, and the absence of partnerships with relevant supporting agencies. Another issue is the presence of food vendors outside the school who generally live nearby and already have regular customers among students. Schools generally feel that they lack the authority to advise these vendors not to sell products that do not meet food safety and nutritional standards and could harm students' health. Sanitation and hygiene practices in such semi-permanent school canteen are also generally not properly observed (MoECRT, 2020; Februhartanty et al., 2018).

Schools with canteens similarly face challenges. They frequently encounter problems in maintaining the canteen infrastructure and providing good services. The majority of school canteens are small in size — with too few seats, lacking in hand-washing and other hygiene and sanitation facilities, no clear standard operational procedures, and limited supervision from the school management and health center (Rachmadewi et al., 2021). Moreover, a number of school canteens still do not implement any nutrition-related aspects to their operation, such as hiring food handlers with proper knowledge and practices on food hygiene, sanitation, and nutrition (in terms of food portion and ingredients) for school-age children and adolescents. They experience difficulty in sustaining a good service because strict supervision from the school management is not in place as well as the weak commitment from the stakeholders, including the local government to support the canteen operation.

Schools that have succeeded in establishing healthy school canteens still face challenges related to certification. The school canteen certification mechanism is complex and involves several agencies from various sectors at various levels of government. To date, there is no uniform agreement in awarding a healthy school canteen (MoECRT, 2020; Februhartanty et al., 2018). This can hamper any school from developing a healthy school canteen as part of the conducive learning environment. Moreover, establishing a healthy canteen is directly related to the three pillars of the School/Madrasah Health Program — called *Trias UKS/M*— namely health services, health education, and a healthy school environment. As such, a healthy school canteen is a mandatory component of this program (MoECRT, 2020).

Previous studies revealed that school canteens in Indonesia often provided unhealthy foods and drinks, including deep-fried snacks and sugar-sweetened beverages (Ford Fondation et al., 2019; Krisianto et al., 2013). According to the findings of a qualitative study, while schools had different management in selling foods, there was no control over the types of foods and drinks sold, which were generally unhealthy. Furthermore, teachers are typically not aware that nutrition education is part of their responsibilities as role models for students at school (UNICEF, 2021).

B. School Canteen Roles and Significance

As part of the school environment, the school canteen is in a unique position to make a positive contribution to the health and well-being of students. The school canteen has an important role in providing a variety of healthy and safe foods to help improve the nutrition status of for the school community (e.g., teachers, staff, and students) especially as they spend longer time at school with the implementation of the full-day school system (Ford Fondation et al., 2019).

There are at least two main reasons why a school canteen is such an important facility at school. The first reason is about the health of the school community and the second is in the context of education. The health of the school community (e.g., educators, education staff, and students) is a critical prerequisite for them to participate in a good educational process. A person's ability to learn depends on his/her health which is usually determined by the quality of his/her food and nutritional intake. When one's health is jeopardized, no activity can be done (MoECRT, 2020).

On average, students spend between 4 and 8 hours per day at school, where they also take their breakfast, lunch, and snacks (Khusun et al., 2020). To participate in school activities optimally, they need healthy and nutritious foods and drinks that support their well-being. Some parents usually prepare breakfast and lunch boxes for their children, but many others let their children go to school without bringing any proper food. Rather, they give their children pocket money to buy foods from vendors surrounding the school environment. This is where the important role of school canteen of providing nutritious food and promoting healthy food consumption becomes more pronounced (Februhartanty et al., 2018). Accordingly, the availability, accessibility, and affordability of foods and beverages at school canteens have a strong influence on the diets of school children and adolescents (Welker et al., 2016).

Aside from serving healthy food sources, the school canteen can play the following functions (Februhartanty et al., 2018):

- Source of information about nutritious and healthy food and drink options.
- As a learning venue for developing entrepreneurship skills for students as well as other subject matters such as economics, accounting, chemistry, biology, physical education, and health.
- Building students' character such as honesty, discipline, responsibility, and clean and healthy behavior.

IV

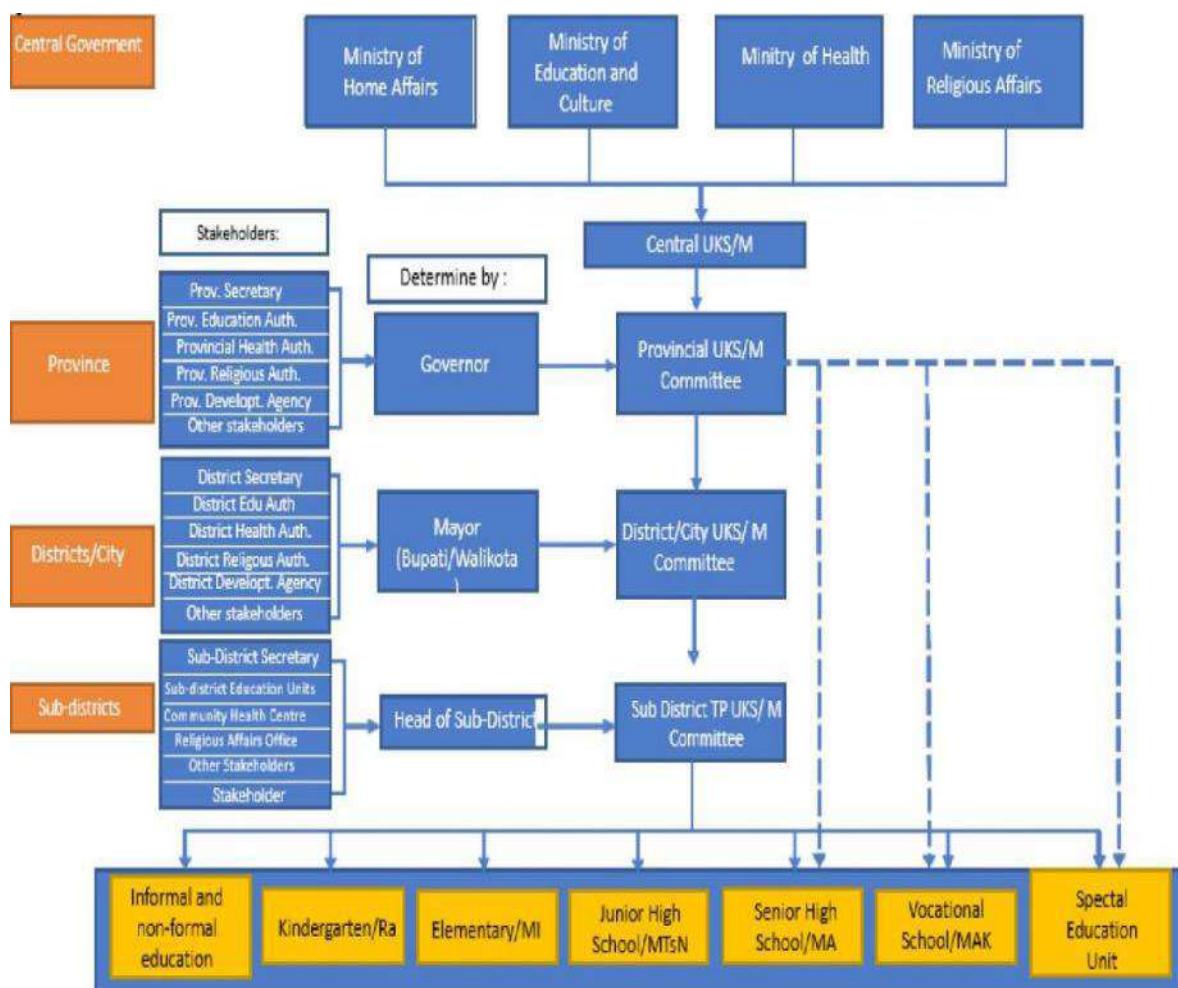
Overview of Policy Framework on School Health and Healthy School Canteens

A. Policies on School Health

The Indonesian government recognizes the importance of ensuring good health among school-age children and adolescents to enable them to perform well academically. Thus, in 2014, a joint policy among four ministers (i.e., the Minister of Health, Minister of Education and Culture, Minister of Religious Affairs and Minister of Home Affairs) institutionalized the implementation of the School Health Program (*Usaha Kesehatan Sekolah/Madrasah* and hereinafter abbreviated as *UKS/M*).

The UKS/M program is the main foundation for promoting healthy behaviors and a healthy school environment (including the school canteen) among members of the school community (Rachmadewi et al., 2021). It emphasizes a continuous improvement in clean and healthy living behaviors to create a healthy environment in every path, type, and level of education. In general, the UKS/M aims to encourage students to adopt healthy lifestyles and create a healthy environment to allow for optimal growth and development of children in their process of being a whole Indonesian human being (Ministry of Law and Human Rights, 2014).

The development and supervision of UKS/M is carried out by the UKS/M Supervisory Teams, starting from the central, provincial, district, sub-district, to school level (Figure 4). This supervision aims to: 1) determine the implementation process; 2) obtain an overview of the implementation of UKS/M activities; 3) measure the success of UKS/M implementation; 4) understand the obstacles in the implementation; and, 5) assess the impact of UKS/M implementation on students.



MI—Madrasah Ibtidaiyah (Islamic elementary schools); MTsN—Madrasah Tsanawiyah (Islamic junior high schools); MA—Madrasah Aliyah (Islamic senior high schools); MAK—Madrasah Aliyah Kejuruan (Islamic vocational high schools)

Figure 4. Development and supervisory teams of UKS/M at central, provincial, district, and sub - district level.

The UKS/M program consists of three main activities, namely: health education, health services, and the establishment of a healthy school environment. The implementation of these activities necessitates the collaboration between all relevant stakeholders, such as the school principal, the school committee, student organizations, parents, teachers, community health centers, and other governmental organizations. The detailed roles of each stakeholder in the UKS/M implementation at the school level are as follows:

1) School Principal

As the head of the UKS/M program, the school principal is responsible for establishing a healthy school environment by involving other school components.

2) Teachers

Teachers play significant roles in giving education related to the healthy school canteen, becoming the role models of healthy lifestyles, as well as monitoring the implementation and evaluating the impact of the program on the students.

3) Students

Students are both objects and subjects in the implementation of the UKS/M program. Their involvement is aimed at fostering clean living behaviors and supervising the cleanliness and sanitation of the school and classroom environments by working in groups. They are also encouraged to convey health messages to their family members.

4) School Committee

The school committee as the organization of parents is expected to help in fundraising and providing the facilities for UKS/M program implementation.

5) Local Government

The local government takes the main supervisory role over the implementation of UKS/M by informing the school principals on the matters that need to be followed up.

6) Primary Health Centers and Indonesian Food and Drug Administration

These two governmental institutions are in charge of supervising and giving training on the healthy school implementation, including the school healthy canteen, food quality, and safety, as well as good hygiene and sanitation practices.

In line with the UKS/M program, the Indonesian government previously issued several policies related to the requirements for facilities to support health that must exist in the school environment. As stipulated in the Government Regulation No. 19/2005 on National Education Standards, every school must have a canteen to support learning activities (Ministry of Law and Human Right, 2005). There is also the Indonesian Ministry of Health Decree No. 1429/MENKES/SK/XII/2006 on Guidelines for a Healthy School Environment including the school canteen (Ministry of Health, 2006).

The establishment of a healthy school canteen should ideally follow the following five steps: 1) brainstorming phase; 2) personnel preparation; 3) facilities development; 4) vendors selection; and, 5) monitoring and evaluation for improvement. These steps can be carried out by the UKS/M teams in collaboration with primary health centers and the school committee since a healthy canteen is one of the UKS/M's programs. Through this collaboration, it is expected that the operation of a healthy school canteen in terms of facilities, healthy food provision, and canteen management will run optimally (MoECRT, 2020; Februhartanty et al., 2018).

B. Healthy School Canteens Guidelines

At the national level, the policy formulation on healthy school canteens involves the Ministry of Education and Culture, the Ministry of Health, the Indonesian FDA, and the Ministry of Religious Affairs. There are several standard guidelines for healthy school canteens which focus on different aspects.

The first guideline is based on the Indonesian Ministry of Health Decree No. 942/MENKES/SK/VII/2003 on Guidelines for Food Hygiene and Sanitation. This policy regulates the requirements and behavior of the school canteen's food handlers, sanitation, clean water supply, quality of raw materials, use of food additives, food storage, distribution, and food

safety and quality control (Ministry of Health, 2003). The school canteen building should provide hygiene and sanitation facilities, including clean water, and have proper lighting, ventilation, room air quality, and distance to waste disposal sites. Specifically, the decree requires a school canteen/stall building to have the following (Ministry of Health, 2006):

- 1) A place to wash eating and drinking utensils with clean running water;
- 2) A hand-washing area for visitors coming to the school canteen/stall;
- 3) Storage facilities for food ingredients;
- 4) Closed storage facilities for cooked food;
- 5) Storage facilities for eating and drinking utensils;
- 6) Location of the school canteen/stall is at least 20 m from the temporary garbage dump.

The UKS/M Implementation Guidelines issued by the Ministry of Education and Culture, through its Directorate General of Basic Education, emphasize several requirements that must be met in the implementation of a school canteen/stall as follows (MoECRT, 2012):

- 1) Snacks must be wrapped and/or covered to protect them from flies, animals, and dust;
- 2) Foods sold must be fresh and/or within the expiration date;
- 3) Food storage areas must be clean and free from dust, hazardous materials, insects, or animals;
- 4) The place for food processing or preparation must be clean and meet the health requirements according to the applicable regulations;
- 5) Equipment used for processing and serving food, as well as eating utensils, must be clean and stored in a place free from pollution;
- 6) Every equipment is used according to its function;
- 7) Any equipment designed for a single use must not be reused;
- 8) Food service providers must always maintain cleanliness and wash their hands before cooking and after using the toilet;
- 9) If there is no canteen available at the school, training for and supervision over food vendors around the school must be carried out. This includes guidance and supervision on the types of food/beverages sold, presentation, packaging, and use of any preservatives, dyes, and flavoring agents.

On the aspect of food, the Indonesian FDA sets the standards as the supervisory party based on the World Health Organization's five key standards on providing safe food. A healthy school canteen should ensure the following:

- 1) The food provided should be safe and clean
- 2) Proper hand-washing procedures shall be practiced among canteen personnel and students
- 3) Food labels should be clear

- 4) Students should be trained to read nutrition facts on food labels
- 5) A range of healthy beverages should be provided
- 6) Foods and beverages containing coloring agents in an amount that exceeds the safety standard are prohibited
- 7) Foods with flavoring agents in an amount that exceeds the safety standard (e.g., excessive sweetener) are prohibited
- 8) Fast food must be limited
- 9) Unhealthy food must be limited
- 10) Foods that are high in fiber should be provided

C. Policy Implementation Challenges

One of the important enabling factors to establish a healthy school canteen is to formally set up a canteen committee. The commitment from school authorities in setting up this formal committee is crucial. In many instances, the leadership of the school principal facilitates the next steps, which include obtaining advice, assistance, and resources, engaging support, and raising awareness among the school communities (Bronwyn et al, 2005). Despite the important role of a school canteen committee, many schools in Indonesia still do not adopt this mechanism. A qualitative study on several schools in Klaten, West Lombok, and Jakarta found that many canteens had inadequate infrastructure and were managed informally, with limited rules, monitoring, and supervision (Rachmadewi et al., 2021).

In the guidelines for healthy school canteens in the new normal era, the Ministry of Education and Culture reveals that besides the substandard management system, a weak collaboration between schools and related institutions, such as the Department of Health, primary health centers, and the Indonesian FDA, in the field is a considerable hindrance. This lack of cooperation may lead to other challenges such as minimum supervision of the food safety and relevant training for food handlers, including the absence of proper hygiene and sanitation facilities at schools (MoECRT, 2020).

The school canteen's main function of providing healthy foods remains to be a serious challenge in Indonesia. Although healthy food options, including vegetables and fruits, are available at most canteens, unhealthy foods and beverages are abundant and cheap due to the presence of street food vendors around the school, especially those who do not have a full understanding of food safety and quality Rachmadewi et al., 2021). Usually, school management teams cannot control these street food vendors as they operate their business outside the school's premises.

To overcome the above issue, the Indonesian FDA continuously runs a program that guides school canteens in ensuring food safety. The Indonesian FDA ensures that school canteens provide safe food for their students according to the set criteria. Committed schools are provided with rapid food test kits, so they can evaluate and report any violations using a certain real-time application. The program involved around 17,000 schools all over Indonesia in 2019 and aims to cover more schools in the following years (BPOM, 2019).

Another challenge of implementing a healthy canteen is the sparse knowledge of school principals, teachers, education staff, and food providers/vendors on food and nutrition. They think that the health sector is solely responsible for children's health and nutrition. Likewise, students do not fully understand the concept of healthy and unhealthy food choices. The main drivers of their food choices are taste and availability. Thus, children without proper nutrition knowledge do not consume healthy foods, such as fruit and vegetables, as these may be not to their liking (Rachmadewi et al., 2021).

During the pandemic situation, school canteens are closed due to the implementation of the school-from-home (SFH) policy. When school canteens can be reopened, several health measures must be in place. The school management teams should prevent the spread of the virus by: 1) ensuring that the canteen facilities are sanitized; 2) requiring visitors to practice social distancing measures, wash their hands, and put on a mask before and after having a meal; and, 3) serving healthy and high-quality foods. As for schools that do not have a canteen or schools whose canteen is not yet ready to operate fully, students and all of the school members are encouraged to bring food from home. In this case, parents' role becomes essential to ensure the nutrition intake of their children. An extensive management and involvement of all essential parties in the implementation of healthy school canteens should be made a priority (MoECRT, 2020).

V

Best Practices of Healthy School Canteens

A. Selection of Schools with Healthy School Canteens and Data Collection

Data on the best practices of healthy school canteens of several schools in Indonesia were gathered through focused group discussions (FGD). The FGD sessions were conducted by the Healthy School Canteen (HSC) team of the Southeast Asian Ministers of Education Organization Regional Centre for Food and Nutrition (SEAMEO RECFON) in coordination with representatives from the Ministry of Education and Culture, Ministry of Health, Indonesian Food and Drug Administration (FDA), and Ministry of Religious Affairs. Twenty-six schools were initially recommended by the above-mentioned ministries for the selection process based on their achievements in the national school health program and healthy school canteen awards. Eventually, 10 schools were considered to be included in the FGD sessions for the second phase of selection process based on their representativeness for the following aspects: Region, level of education, and school type, such as general, vocational, and Islamic schools (known as *madrasah*), which include both public and private schools.

The FGD sessions with each of the 10 schools were conducted for 1.5-2 hours via virtual mode due to the pandemic situation. The FGD consisted of 18 questions developed by SEAMEO RECFON on: 1) the school profile; 2) the school canteen implementation covering the four pillars (i.e., commitment and management, human resources, infrastructure and facilities, as well as food safety and quality) contained in the Healthy School Canteen Guidelines by SEAMEO RECFON; 3) the best practices and challenges; 4) sustainability; and, 5) future plans for canteen improvements. Before the virtual meeting, the SEAMEO RECFON HSC team held a virtual meeting with representatives of each school consisting of the principal and canteen manager to explain the FGD process and guide questions aimed at having a similar understanding of the terms and issues to be discussed. Each school was then requested to prepare a PowerPoint presentation about their school canteen based on the guide questions for the actual FGD. The school presentation during the actual FGD was followed by a discussion to obtain clearer information on the healthy school canteen best practices and other related insights. The FGDs were conducted in Bahasa Indonesia. The virtual meetings were recorded with consent from the school representatives, and the narrative data from the recorded meetings were transcribed for further analysis. A thematic analysis was carried out based on the key concepts previously listed in the FGD guidelines. Finally, five schools with unique characteristics and different best practices were selected to represent different education levels (I.e., from elementary to high school) and type (i.e., public, private, and religious) schools.

B. Best Practices, Major Challenges, and Future Plans of Selected Schools with Healthy School Canteens

The section describes some of the healthy school canteen best practices, major challenges and future plans gathered from the five selected schools, namely: SD Muhammadiyah Condongcatur, MTsN 1 Makassar, SMPN 26 Surabaya, SMAN 1 Gerung, and SMK Wikrama Bogor.

1. SD Muhammadiyah Condongcatur (Muhammadiyah Condongcatur Elementary School)

SD Muhammadiyah Condongcatur is one of the private Islamic primary schools under the Muhammadiyah Foundation. The school was officially established in 1990 in Yogyakarta City in the central south of Java Island. Like other primary schools in Indonesia, it offers six grade levels for around 861 students in the current academic year. The vision of the school is to develop students to be smart, of great character, cultured, skilled, and excellent in the global community. As one of the favorite schools in Yogyakarta, SD Muhammadiyah Condongcatur has earned many achievements. Some of them are related to health and nutrition, such as being the winner of the National Healthy School Competition held by the Ministry of Education, Culture, Research, and Technology in 2019 and as one of the awardees of the Indonesian FDA in 2020 for providing safe foods to their students.

Brief Descriptions of the School Canteen and Its Major Challenges

a) Physical Description of the Canteen

Kantin Siti Walidah is the name of the canteen owned by SD Muhammadiyah Condongcatur. The canteen aims to provide safe and healthy food for the school members as an approach to improving students' performance. *Kantin Siti Walidah* serves both the students and teachers of the school. It can cater to around 300 students at one time. The canteen is equipped with adequate physical facilities, such as tables, chairs, food preparation equipment, kitchen, water supply, and electrical facility. It also has indoor and outdoor areas.

b) Meal Service Provided

The canteen serves food until the school activities are over in the afternoon. Besides providing a variety of snacks during break time, the canteen provides lunch for all students 5 times a week which is one of the school programs. The cost of the lunch is collected from the parents along with the monthly school fee so students no longer need to pay when they eat food at the school canteen. The menu is set by the school canteen management composed of the school principal, the teacher responsible for UKS/M, and the canteen manager in collaboration with the parents based on the guideline issued by the Ministry of Health. The nutrition composition of the food served is also calculated. The canteen management regularly monitors and evaluates the menu acceptance by the parents and students.

c) Basic Management of the Canteen

The canteen management's organizational structure consists of a canteen manager, a cashier, and staff of the sales and kitchen divisions. The canteen manager reports to the responsible person under the supervision of the Indonesian FDA in Yogyakarta and the primary health center. All canteen staff have attended a school canteen food safety training conducted by the local FDA and received a recognition certificate. Furthermore, the school also has a food safety team consisting of teachers, the school health program

coordinator, canteen staff, parents, and students. The team checks and evaluates the menu conformity daily in collaboration with the parents.

Food safety and quality are guaranteed by the school as it implements a complete standard operating procedure, starting from supply procurement, production, food storage, to hygiene and sanitation. All food vendors and suppliers are registered and should agree with the school's regulation by signing a memorandum of understanding. The local FDA carries out regular food audits (Figure 5). To ensure that students consume healthy food, the school prohibits them from buying food outside the school. The parents are informed about this rule through a written notification letter.

Kantin Siti Walidah also conducts food literacy and vegetable cultivation activities for the students. Through these activities, students can learn comprehensively about the food they eat as well as the health benefits they can get from consuming them. Moreover, the students are involved in food waste management from which they can practice hygiene and sanitation.



Figure 5. Food sample testing by the Indonesian FDA.

d) Major Challenges

Students tend to refuse the menu that the canteen prepares regularly because they are not familiar with healthy foods which do not match their preferences. This is the main challenge of *Kantin Siti Walidah* management. In the initial phase of the healthy canteen implementation, the school found that some students would not consume the food being served such as brown rice and vegetables. The school canteen management has to advocate the menu with the parents and the students and, has to do some food modifications to make them healthy and more acceptable to the students.

Best Practices of the School Canteen

a) Plastic-free Canteen

The school canteen has been operating in a plastic-free setup to support environmentally friendly movement since 2019. The school is committed to minimizing plastic use in all canteen aspects, including utensils, packaging materials, and food containers. This commitment is documented in the school principal's written decree and also informed to the parents. To replace single-use plastic, another environmentally-friendly material, such as banana leaves, for food packaging and container (Figure 6). Students are also recommended to bring reusable plastic utensils from home.



Figure 6. Banana leaves as food wrapping materials.

b) Modified Traditional Food in School Canteen Menu

To provide healthier food choices, *Kantin Siti Walidah* also serves a modified traditional food for the students. The most favorite traditional food — called *bakso ciblon* — is a modified meatball soup with small vegetable pieces such as carrot, spinach, and other green leafy vegetables added to the meatball's mixture. This healthy meatball soup is sold in the *angkringan*, a type of traditional stall commonly found in Yogyakarta (Figure 7). This strategy helps increase the vegetable consumption of the students and other school community members.



Figure 7. Angkringan selling healthy meatball soup.

c) Implementation of “My Plate” Guideline at Mealtimes

Another effort of the school to ensure healthy food intake by the students is developing their daily eating habits following the “My Plate” guideline recommended by the Ministry of Health through a mandatory lunch program. The lunch menu offered consists of main dishes (i.e., rice, protein-source, fruit, and vegetables) as well as homemade snacks (e.g., pudding, cupcakes, tofu, and soy milk). Students eat together the lunch and snacks provided to them at the school canteen so that they can learn more and motivate each other about consumption of healthy foods. A student who can finish the meal will be appreciated by his/her peers and become a role model. The school teachers, as well as the parents, guide the students to increase their understanding about healthy foods.

d) Canteen as a Learning and Character-Building Platform

The canteen serves as a platform to shape students’ character. The school has prescribed activities for the students to practice whenever they are at the canteen such as hand-washing habits, queuing to get the food, praying before and after eating, and also taking their dirty plate to the cleaning station. The school also offers skill development activities at least once every semester and are already scheduled annually in collaboration with the canteen management as well. Examples of these skills development activities are the market day field trip during which students will learn about healthy food selection and processing, and a cooking class conducted every Friday for female students (Figure 8) under the supervision of teachers.



Figure 8. Cooking class for students.

Enabling Factors in Healthy School Canteen Implementation

SD Muhammadiyah Condongcatur operates the canteen in partnership with the local primary health centre, FDA, and District Health Office to ensure its credibility in serving healthy food. As for the management, the school is assisted by Muhammadiyah’s local

leaders, teachers, and school committee consisting of parents. In terms of budget, SD Muhammadiyah Condongcatur receives a contribution from *Dana Sehat Muhammadiyah* (DSM), a funding program managed by Muhammadiyah Foundation, apart from the school's funding. The profit from the canteen also contributes to the canteen's operation.

Plans to Sustain School Canteen Operations and Its Best Practices

The school plans to maintain its canteen management practices and continue serving healthy food for its members. The healthy school canteen team is eager to provide a wider variety of nutritious meals to meet the students' preferences. Moreover, the school will continue its extensive collaboration with the local primary health centre, FDA, and District Health Office in monitoring food hygiene and quality as its priority.

2. MTsN 1 Makassar (Makassar Islamic Public Junior High School 1)

Established in 1982 by the Department of Religious Affairs, MTsN 1 Makassar is continuously serving the educational needs of adolescents of South Sulawesi's capital city, Makassar. It is a comprehensive three-year Islamic public junior high school with around 1,400 students enrolled during the 2020/2021 academic year. The school aims to prepare high-quality, competitive, global learners with great character and moral standards. The school also exerts itself to create a healthy, green, and comfortable learning environment. The school embeds hygiene and sanitation lessons into the curriculum through every subject taught by the teachers as well as through educative games in extracurricular activities. MTsN 1 Makassar has received the hygiene and sanitation ambassador award at the provincial and national level three times in a row in 2012, 2013, and 2014 as a result of the school's thorough preparation of their student ambassadors.

Brief Descriptions of the School Canteen and Its Major Challenges

a) Basic Management of the Canteen

The school canteen supports the school's vision of creating a healthy learning environment for its students. Since the school believes that their students are potential future leaders, the school canteen ensures that only safe and healthy foods are sold to them. Apart from having hygiene and sanitation ambassadors, the school has formed its food safety team, adhering to the school principal's written decree. The candidates undergo a series of tests before joining the team to verify their eligibility and competencies. All members of the school community are involved in the team, including the school principal, head of the school committee, several vice principals, UKS/M coordinator, as well as representatives of teachers, parents, canteen management team, and students. All members have to sign the declaration of a healthy canteen as proof of their commitment to manage, guard, and supervise the operation of *Kantin Assa'adah* and *Halalan Thoyyiban* in providing halal, safe, nutritious, and high-quality food.

b) Physical Description of the Canteen

In terms of the canteen facilities, MTsN 1 Makassar has a 180m² sturdy permanent building which also houses a book gallery. The canteen also functions as a study, discussion, and consultation area. It is equipped with musical instruments and a set of sound system that students can use during recess. Foods are placed in pest-free storage. Clean water is provided to be used for processing food, washing hands, as well as cleansing tableware and cutlery. The trash cans are classified based on the types of waste. There is also a dedicated janitor who works on a certain schedule to maintain the canteen's cleanliness.

c) Meal Service Provided

The canteen vendors mostly serve the students during the school's break time. The vendors are strictly selected to maintain the standard set by the school. Only those who are committed to providing healthy and halal food can vend their food in the canteen (refer to the best practice of "Standardization in the Requirements for Canteen Vendors").

In the daily operation of the canteen, there is commonly a long queue as almost all students come at the same time to get their food from around 12 stalls available at the canteen. To anticipate the situation, the school encourages the children to bring their cutlery from home. Students place their cutlery in the stall where the foods they want are available, place an order, and make a payment in the morning before the class starts. The foods are then ready to be picked up by the students at mealtimes with minimal crowd. Once a month, there is a "One Day without Buying Snacks" program, in which students are asked to bring healthy food from home. Through this program, the school aims to involve parents to also provide healthy food for their children.



Figure 9. Information board in the canteen area on the benefits of fruits for the body.

d) Major Challenges

Despite the rules imposed on the vendors, especially regarding safe and halal food standards, the school still encounters violations from time to time. To address this and

improve the school canteen's services, MTsN 1 Makassar requires all vendors to provide food safety and halal guarantee certification of all the foods they sell to the school community.

Best Practices of the School Canteen

a) Standardization in the Requirements for Canteen Vendors

The school requires the food vendors to be in good health condition (i.e., showing no symptom of any infectious diseases, such as influenza), well-dressed, and use appropriate hygiene and sanitation equipment when serving at the school canteen. Before being selected to provide services to the school canteen, the vendors are asked to present their food menu, including the ingredients and the ways to prepare them. Serving of fast food is restricted. Instead, vendors must sell foods in line with the guidelines set by the school. The school conducts an unannounced inspection of the food menus to check if the vendors conform to their plan and the school's guidelines. Moreover, a CCTV camera is placed in the canteen area to monitor the daily management process. To keep up with the standard, regular education and socialization regarding food safety and halal aspects is given to all school members, including the vendors. Moreover, vendors are always reminded about healthy food and hygiene and sanitation practices as posted on the information boards displayed in the canteen area.

b) Selling of Safe and Halal Foods Only

All foods sold at the canteen must be halal and meet the requirements for healthy snacks for school children. Any packaged foods should be registered and approved by *Majelis Ulama Indonesia* (MUI). The ingredients of unpackaged foods should be confirmed to be halal before they could be sold in the canteen according to the available halal food list. Foods that are not included in the list cannot be sold at the canteen and should be replaced with similar products with a halal certification. In terms of food safety and compliance with the healthy snack standard for school children, the local FDA has audited and certified all of the food menus served. The management will warn the vendors for any violations they make. Students are also trained to identify the halal aspect of the food by checking the logo and certificate of the products.

c) Canteen as a Medium for Students' Character Building

Along with its function of providing healthy foods to the school members, the school canteen aims to shape the character of students to behave honestly and responsibly as citizens through its *Kantin Kejujuran Halalan Thayyiban* initiative (Figure 10). Students can buy the food they want and put the money in a container and take the change by themselves. Moreover, the payment can be done digitally. All of the *Kantin Kejujuran* activities are monitored by CCTVs placed in the canteen area. The program is supervised by the school principal and canteen management team. This arrangement is beneficial for a school with limited human resources in running a school canteen and serving the nutritional needs of the students. For this best practice, MTsN 1 Makassar was recognized by the Attorney-General's Office in the *Kantin Kejujuran* program.



Figure 10. Kantine Kejujuran Halalan Thayyiban.

Enabling Factors in Healthy School Canteen Implementation

MTsN 1 Makassar has been collaborating with several parties in operating the school canteen. The school relies on the Indonesian FDA in ensuring the quality and safety of foods sold in the canteen through regular audits and sampling tests to identify any hazardous material contamination. Regarding the canteen hygiene and management, the school is supervised by sanitarians from the local primary health center under the Department of Health. Furthermore, the Department of Religious Affairs and *Majelis Ulama Indonesia* help to ensure that all foods sold in the canteen are halal. The school coordinates with officers from the Halal Product Section of MUI to guarantee a halal vendor certification so that only those who meet the criteria can sell their products at the canteen. To facilitate an easy payment process, the school cooperates with the banking sector in enabling digital transactions using cell phones. The school cooperative is in charge of the operational fund, the management of eight stalls rented to the vendors, as well as the canteen funding unit under the supervision of the school management team. Profits from the canteen are used as an additional fund for the school's operation. An internal consolidation meeting among the school's leaders, teachers, and canteen management team is regularly held to ensure a continuous operation of the canteen.

Plans to Sustain the School Canteen Operations and Its Best Practices

The school plans to optimize the use of technology to upgrade the canteen into becoming a smart canteen in terms of having an e-food payment system. The school will prepare the physical infrastructure and software needed to realize this plan. However, maintaining the current canteen system is considered equally important.

3. SMPN 26 Surabaya (Surabaya Public Junior High School 26)

SMPN 26 Surabaya, founded in 1983, is one of the public junior high schools providing three-year educational services for the residents of Surabaya, the capital city of East Java province. The school aspires to develop students who are academically excellent, religious,

and environmentally concerned, as well as having global insights. For its dedication to addressing environmental issues, SMPN 26 Surabaya has been recognized as one of the *Adiwiyata* schools in Indonesia since 2012. In 2021, the school had around 1300 learners enrolled. It implements several programs to shape the students' character, including those related to health and nutrition as part of their extracurricular activities as well as integrated in their classroom subjects, such as civics, social sciences, and biology.

Brief Descriptions of the School Canteen and Its Management

a) Physical Description of the Canteen and Meal Service Provided

The current canteen of SMPN 26 Surabaya was established in 2009 by optimizing the school's water absorption area into a useful space. Thus, the canteen is known to be a floating canteen. It serves the students during break time, twice a day. Students can choose their preferred meal from 8 stalls in the canteen area which sell different kinds of food. The canteen sells both traditional Indonesian and Surabaya foods. Most of the vendors have been selling their foods in the school even before the floating canteen was constructed.

b) Basic Management of the Canteen

The canteen is managed by the school under the supervision of the local primary health center. The management team consists of the school principal, the responsible teacher for the UKS/M program, an internal supervisor, a canteen manager, and students. All canteen activities follow the standard operating procedures set by the school based on the government's regulation and vendors' contract. The vendors' contract is renewed yearly in line with the vendors' development program. It includes a commitment statement that the food sold should be free from plastic and hazardous material, such as synthetic preservative, colouring agents, sweetener, and flavour enhancers (known as "5Ps" in Indonesian, which stands for *plastik, pengawet, pewarna, pemanis buatan, and penguat rasa*).

Every three months, the food samples go through a regular inspection done by a primary health center officer in terms of food safety and nutrient contents. During this time, the vendors will also be given training and reminders on food safety. Any violations against the regulation and vendor commitment will result in a contract termination to stop the practice of some vendors of serving foods not according to the school's standards.

c) Major Challenges

The old school canteen was small, semi-permanent, and built only with triplex material. Thus, the former school principal thought of building a permanent canteen over the flood water absorption area to optimize this space. The current canteen has above-par quality of building and facility and is considered as one of the healthy school canteens in the region.

The school has been maintaining the same set of vendors ever since. However, the school experiences the challenge with some of the vendors who could not fully comply with the school's standards, including the 5P regulation, in selling healthy foods in the canteen. Thus, the school has to continuously guide them and build their capacities on

safe and healthy food in collaboration with external parties, such as the local health office and Indonesian FDA. The school also involves their students as internal supervisors of the canteen's operation.

Best Practices of the School Canteen

a) Operating as an Eco-friendly Healthy Canteen

SMPN 26 Surabaya is known to have a floating healthy canteen as it is built over a flood water absorption area, which is also used as a fish pond, to optimize its function (Figure 11). The canteen adopts an eco-friendly concept, which is connected with healthy food. The name “3R (Reduce, Reuse, and Recycle) Floating Canteen” reflects the policy and practices of the school. The school has managed to reduce all wastes generated from the canteen's activities to prevent environmental pollution. Organic waste is processed into compost, while some other types of waste, such as paper, are reused for packaging purposes. Plastic use is forbidden in the canteen area. The compost produced is displayed at an education exhibition in collaboration with *Tunas Hijau*, one of the environmental non-profit organizations in Surabaya.



Figure 11. 3R Floating canteen at SMPN 26 Surabaya
(Source: Gumlilang, Jawa Pos, 2019).

b) Canteen as a Learning Facility

The canteen is utilized as a learning facility for students and teachers of SMPN 26 Surabaya. Students can do extra-curricular activities in the canteen area. For certain subjects, like economics, the canteen facilitates hands-on lessons and experiences in financial transaction and accountancy for the students. Nutrition education also takes place in the canteen. In every stall, the nutrient contents of foods sold, as the result of the Indonesian FDA analysis, are displayed on information boards for the awareness of the school community.

The canteen is also regarded as an effective platform for students' character development, especially about honesty, cleanliness, and cooperation. For instance, on entering the canteen, students need to buy coupons to minimize cash transactions in buying foods from any of the vendors therein, wash their hands, and take off their shoes or any footwear.

c) Involvement of the Students in the Canteen Operation

Students are very well involved in the school activities related to nutrition and health, including in the canteen operation. The school has formed a team of voluntary teen health cadres (*Kader Kesehatan Remaja/KKR* in Indonesian language) embedded in the school health program in collaboration with the primary health center. The team is in charge of the canteen's regular hygiene supervision. They also have the authority to warn the vendors on issues of food safety, particularly in compliance with the 5P regulation.

Students are encouraged to participate in the environmentally-friendly activities of the canteen. They sort out wastes regularly and take account of the candied mango processing once in a while as the school has over a hundred mango trees. The candied mangoes are produced by the students in the school kitchen using tools provided by the city government and sold at the canteen. The profits are used for the teen health cadre team's activities.

Enabling Factors in Healthy School Canteen Implementation

SMPN 26 Surabaya cooperates with eleven institutions, both governmental and non-governmental ones, including the media to ensure the canteen's long-term viability. It is also involved in a sister-school program initiated by the government, in which schools are sharing their experiences so that other schools can adapt their best practices. The school collaborates with Universitas Airlangga Surabaya and the local FDA for the provision of canteen training. In terms of funding, the school uses the regional budget to pay the salaries of contractual employees. For light maintenance, the school makes use of the operational assistance from the government. In addition, the school receives a sectoral donation, especially from its alumni. All of these collaborative activities are stated in the school's annual work plan.

Plans to Sustain the School Canteen Operations and Its Best Practices

The school intends to maintain its relation with the local primary health center and FDA. Furthermore, the school plans to expand the canteen capacity to accommodate more students to be more comfortable for their study activities towards improving their academic performance.

4. SMAN 1 Gerung (Gerung Public Senior High School 1)

Located in West Lombok Regency of West Nusa Tenggara, SMAN 1 Gerung was established in 1983. Currently serving 976 students with one-third of them coming from a poor community, this school has a vision of developing the best generation with great character and environmental awareness. It has received the *Adiwiyata* school award since 2012. The award, also known internationally as the Green School achievement, is one of the Ministry of the Environment's programs aimed at increasing school members' knowledge

and awareness of environmental conservation efforts. As an *Adiwiyata* school, all members of the school community are expected to promote a healthy environment and prevent negative environmental impacts.

Brief Descriptions of the School Canteen and Its Major Challenges

a) Basic Management of the Canteen

The canteen is part of the efforts to realize the school's vision and missions, especially in developing a healthy school environment. The school management team is well aware that students coming from poor families have various malnutrition problems, such as iron-deficiency anemia, which affects their levels of immunity, concentration, fitness, and productivity, resulting in poor learning achievements. The school canteen was established for the purpose of providing affordable and nutritious food and drinks for the students, especially those who do not have breakfast before going to school.

As part of the school health program, the school management team regularly monitors the canteen's food and environmental safety. The school requires that foods sold at the canteen must not contain any harmful preservatives or artificial colorants and be placed or stored in appropriate facilities and containers to avoid contamination. Food vendors sign a contract with the school to ensure their compliance with the school's regulations. Any violation by the vendors will either result in receiving sanctions or contract termination from the school management.

b) Physical Description of the Canteen

SMAN 1 Gerung's canteen follows the healthy canteen management standards and hygiene and sanitation requirements for a school canteen set by the Indonesian FDA. The canteen building is protected from contamination sources and also far from the toilet and waste processing unit. It has a clean water source and proper food waste management. The canteen is also equipped with outdoor tables and chairs for the students. Being consistent in applying these standards, the school canteen became an awardee of the Star Charter and Certificate of Hygiene and Sanitation for School Canteens issued by the West Lombok Health Office in 2019.

c) Major Challenges

SMAN 1 Gerung is serving students from different social-economic backgrounds. Around 30 percent of the students come from a poor community. This condition presents a challenge to the canteen to provide healthy foods to all school members. Students belonging to a poor family usually cannot afford the foods sold at the school canteen. Thus, the school canteen management team has to provide healthy foods for free to less fortunate students which has an implication to the school's budget.

Another issue that the school faces is the existence of food vendors outside the school canteen who typically sell foods that do not meet the health standards for the students. Thus, the school management has to involve the vendors around the school in a food safety training, instead of prohibiting them to operate in the school environment.

Best Practices of the School Canteen

a) Free Foods for Less Fortunate Students

The school canteen supports the *Aksi Bergizi* program organized by UNICEF and West Lombok's District Health Office to improve students' awareness of healthy behaviours, especially on having breakfast before going to school. This program is in line with local wisdom, which is called *berayan* or *begibung*, meaning to bring food to eat together. To serve the less fortunate students on a daily basis, the school initiated a free food program. The free foods are placed in an enclosed glass cabinet (Figure 12) for the less fortunate students to take them conveniently. The budget for this program comes from the canteen's profits. Other students can also donate foods and can also take foods from the cabinet for breakfast or lunch. Because of this program, SMAN 1 Gerung was adjudged as the best school in the breakfast and iron supplementation category of *Aksi Bergizi* competition for Indonesian teenagers in West Lombok Regency.



Figure 12. Free-food display cabinet at SMAN 1 Gerung.

b) Comprehensive Training on Healthy Food for Canteen Managers, Vendors and Students

The school, in collaboration with the local Health Office and the Indonesian FDA, organizes training activities twice a year on healthy food, food safety, and food inspection for canteen managers and vendors, including those who sell food around the school environment (Figure 13). These training activities aim to ensure a healthy school environment through enhancing vendors' understanding and responsibility to provide healthy foods for all of the school members. As for the students, healthy food literacy activities are done by the teachers every day for around 10-15 minutes before the first-class period. Moreover, the school canteen runs a peer educator program, along with the school health program. The responsibility of the peer educators is to give information about food safety to their classmates.



Figure 13. Training for canteen vendors.

Enabling Factors in Healthy School Canteen Implementation

The canteen management is included in the school's program and budget planning as indicated in the written decree from the school principal. A share of the school tuition collected is allocated for incentives for the canteen staff and facility development. Another source of funding for the canteen's operation is the split profits with the vendors. The school collaborates with the local Indonesian FDA to ensuring food safety at the school canteen. The school also cooperates with the local health office in conducting health check-ups and iron supplementation for the students.

Plans to Sustain the School Canteen Operations and Its Best Practices

SMAN 1 Gerung will continue to provide trainings and workshops on food and nutrition, both via online and offline modes, to canteen staff, vendors, and students. The school will also continue to help other schools to communicate with the FDA regarding its free food safety inspections. This move is triggered by the common problem shared by the neighboring schools on their lack of food safety and quality assurance from hazardous material.

5. SMK Wikrama Bogor (Wikrama Vocational Senior High School in Bogor)

SMK Wikrama Bogor is a private vocational school founded in 1996 by Prawitama Foundation. It aims to become an information technology-based leading school which showcases environment- oriented culture, national characters, and the ability to meet labor market needs among its students. Around 1,700 students are enrolled in 2021 academic year under seven skills programs, particularly in business and management, information technology, tourism, and hospitality. The lessons are taught through Competency-Based Training (CBT) in which students directly apply the concepts and principles of their subjects in real situations. Along with its vision, the school has implemented several programs

regarding the environment and health such as the school garden. SMK Wikrama Bogor has received several recognitions and awards, namely *Adiwiyata* school since 2012, the Indonesian Green Award in 2016, the First Star of Food Security for School Canteen from the Indonesian FDA in 2018, and the School Canteen Hygiene and Sanitation Award in 2018.

Brief Descriptions of the School Canteen and Its Major Challenges

a) Basic Management of the Canteen

The canteen at SMK Wikrama Bogor is run by a specific management team led by the school principal. Since it is a private school, the foundation and school committee are intensively taking part in the decision-making and policy formulation processes, as well as the supervision. A written policy for the canteen operations has been formulated and included in the school's accountability document along with the policy on the school health program and hygiene-sanitation practices. In terms of food safety, SMK Wikrama Bogor canteen personnel have received several trainings conducted by the Indonesian FDA, primary health center, and SEAMEO RECFON. A refresher training on food safety is held regularly every semester for the canteen staff and students. The canteen is inspected by the Indonesian FDA once a year.

b) Meal Service Provided

The school is well aware that the problems of poor nutritional status and low vegetable consumption persist among the students. Therefore, the canteen contributes to solving these problems by selling healthy foods. In addition to the main canteen, SMK Wikrama Bogor operates four cafeterias for its hospitality and culinary arts study programs. The canteen's facilities and operation follow the Indonesian FDA's guidelines and SEAMEO RECFON's 29 canteen indicators.

c) Major Challenges

Despite having a written policy on the canteen operation, there are still some vendors who sell snacks with high sugar, salt, and fat contents. To address this matter, the school has to conduct continuous education for the vendors and involve the students in the menu planning, food processing, and food modification.

Best Practices of the School Canteen

a) Tailoring Healthy Canteen Operation to the School's Curriculum

The canteen operation supports the school's curriculum through competency-based entrepreneurship training. The canteen functions as a nutrition education platform for the students, especially the 10th and 11th graders, as they are required to take part in the canteen management for three days alternately. The students' involvement includes selling activities during break time and practicing hygiene and sanitation during the learning hours. These programs are approved by all teachers so that the students in charge of the canteen's operation are allowed to skip some lessons. The head of the class is responsible to inform the class assignment to their friends on duty. The students play

a role in supervising the canteen as well as the safety and quality of foods sold therein as nutrition ambassadors (Figure 14).

Furthermore, students are involved in the food processing guided by the canteen officers. The menu is already planned and includes fruit and vegetables. The school also carries out “Fruit a Day” and “Fritter-free Day” programs. These efforts are meant to reduce the intake of foods which do not meet the school’s criteria, such as snacks with high salt and sugar contents. Food modification to improve the nutritional content of certain foods is done in the cafeteria. Evaluation questionnaires related to the menu, canteen’s hygiene and sanitation, as well as the facility are sent out to students every semester as a feedback mechanism for continuous improvements.



Figure 14. Student nutrition ambassador supervising the canteen, and food safety and quality.

b) Canteen as a Business Unit

SMK Wikrama Bogor’s canteen also serves as the school’s business unit. It caters foods for out-of-school activities, such as training held at the Wikrama Hotel managed by the foundation. The foods prepared for such activities partly come from the school garden that is maintained by the students as part of their competency-based training (Figure 15). The canteen processes harvests from the school garden and sell them as breakfast or lunch for the school members.



Figure 15. Harvesting vegetables from the school garden to be processed at the school canteen.

Enabling Factors in Healthy School Canteen Implementation

The commitment from the school leaders, foundation officers, and committee members plays a big role in the successful operation of the school canteen. Another contributing factor is the active involvement of teachers and students in the management of the school canteen. The school also establishes cooperation with competent parties and regulators, such as the Indonesian FDA, SEAMEO RECFON, primary health center, as well as the local Department of Health to ensure the safety and quality of foods served at the school canteen. The foundation is in charge of the canteen's funding, and the funding is managed by the canteen manager. Another source of funding for the canteen's operation is the income generated from providing catering services for the hotel users.

Plans to Sustain the School Canteen Operations and Its Best Practices

SMK Wikrama will continue to implement small but purposive steps to scale up its canteen's operation towards addressing the needs of its clients. Further involvement of parents in supporting the implementation of the healthy school canteen is one of its top priorities. The school also plans to strengthen its collaboration with relevant partners to sustain the operation of the healthy school canteen.

Lessons Learned and Recommendations

A. Lessons Learned

Having a healthy school canteen can project a positive image of a school. Below are some lessons learned from operating a healthy school canteen in Indonesia:

1. School Policy

- a. Having an official written policy that spells out the commitment from school leaders and all the members of the school community to align canteen activities with schools' curricula and programs is critical in ensuring a sustainable operation of a healthy school canteen.
- b. A school can optimize any part of its school's premises to build a school canteen that is appropriate to a given condition as long as it serves the purpose of providing a conducive and healthy environment from which students can take their meals that are prepared according to the existing standards. This is exemplified by the floating canteen owned by SMAN 26 Surabaya that is built over a water absorption area.

2. Canteen Management

- a. Having a management team with clear responsibilities for each member is advantageous in operating a healthy school canteen. The school canteen management team can be composed of representatives of teachers, parents, the school committee, and students and is headed by the school principal. Regular meetings of the management team can address issues and concerns of the school canteen and enable the team to make effective decisions for the overall welfare of the school community. Another option is to entrust the management of the school canteen to a specific unit, such as a school cooperative.
- b. Involvement of the students in the school canteen management may enrich their knowledge on healthier food options, equip them with practical skills in several school subjects such as economics and entrepreneurship, and facilitate their character building and development of healthier habits.
- c. Written Standard Operating Procedures (SOP) are essential in having a common understanding on an effective school canteen management and operation among all parties involved.
- d. It is possible to build and manage an eco-friendly healthy school canteen through a proper waste management. A school canteen can also operate as a business unit by providing catering services to obtain an additional funding for its daily operation and maintenance.

3. Training and Education

- a. A school canteen is a potent platform for building awareness of all members of the school community on healthy food choices and eating habits. This capacity building function is what makes a school canteen a healthy one.

- b. The provision of periodical training courses on food safety as well as hygiene and sanitation for food vendors and handlers as well as the management team can ensure the quality of foods sold at the school canteen.

4. Canteen Supervision and Partnership

- a. The canteen supervision can be done by both internal and external parties. As internal supervisors, students may be given an inspection task for them to practice the knowledge they have gained on hygiene, sanitation, and nutrition, as well as giving them an opportunity to exercise their leadership skills. As for the external parties, a cooperation between the relevant stakeholders, such as the local Health Office and FDA, is advantageous to guide the canteen operation in terms of the hygienic practices of food handlers, sanitation of the facilities, as well as the safety and nutrition aspect of the foods served.

B. Recommendations

1. For the Government

- a. Training and supervision, especially from the local Health Office and FDA, as well as other local government units, should be provided regularly to all schools across the country to ensure and institutionalize the implementation of healthy school canteen standards.
- b. As most schools face challenges regarding the existence of street food vendors outside the schools, relevant local government units must take action to carry out the existing policies on selling healthy foods and practicing proper food handling, as well as creating programs to educate these food vendors.
- c. As schools face challenges in maintaining the quality of foods to meet the nutrition and halal standards, nutritionists from the local Health Office may wish to collaborate with local universities to involve nutrition students to extend community services to schools to provide regular supervision on the quality of foods served at school canteens.

2. For Schools

- a. School canteen activities should be tailored to regular school programs, and the involvement of students and other school community members should be encouraged in managing a healthy school canteen.
- b. The establishment of the canteen management team must be clear in terms of the structure, policies, and responsibilities of all members, and it must be written down for a proper documentation and reference for the daily operation of the canteen.
- c. Schools should foster good relationships with relevant stakeholders to maintain high standards and quality of the canteen's services. Schools should invite street food vendors in their surrounding areas to join training courses and other canteen-related programs and activities to create a comprehensive healthy school environment.
- d. In terms of funding, schools can run a business unit, such as in waste management and food processing, or liaise with private companies in handling their CSR programs. Advocacy to local governments is worth putting in the school's programs to ensure the sustainable implementation of a healthy school canteen.

VII

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Geographic and Sociodemographic Information

Malaysia is the fourth largest country in Southeast Asia by population (World Population Review, 2021). It is separated into two regions, Peninsular Malaysia (known as West Malaysia) and East Malaysia by South China Sea. Malaysia is a federation of 13 states (Perlis, Kedah, Penang, Perak, Selangor, Negeri Sembilan, Malacca, Johor, Pahang, Terengganu, Kelantan, Sarawak, and Sabah) and three federal territories (Kuala Lumpur, Labuan, and Putrajaya). Each state is further divided into districts, which are then divided into township. Kuala Lumpur is the national capital and the largest city in Malaysia.

Malaysia has a total land area of 328,550 km² (World Bank Group, 2021) and a population of 32.66 million as of Quarter 2 of 2021 (Malaysia Department of Statistics, 2021a). About 29.96 million of the population are citizens while 2.69 million are non-citizens; 16.77 million are men and 15.88 million are women. For both sexes, the distribution of population by age group is almost similar (men vs. women; age 0-14 years: 3.88 million vs. 3.63 million, age 15-64 years: 11.73 million vs. 11.01 million, age > 65 years: 1.16 million vs. 1.25 million). Malaysia is a multi-ethnic and multi-cultural country. About 69.8 percent are *Bumiputera* comprising of the Malays and indigenous peoples, 22.4 percent are Chinese, 6.8 percent are Indians, and one percent others (Malaysia Department of Statistics, 2021a). The Malay language is the country's official language and Islam is the country's official religion.

Malaysia practices Parliamentary Democracy with Constitutional Monarchy and His Majesty the King as the Paramount Ruler. Parliament Democracy practices separation of powers into the Legislative, Judiciary, and Executive. Malaysia adopts a system of Democracy with the Federation system. The 13 states surrender its power of financial, defence, education, foreign affairs, and others to the Central Government according to the Malaysian Constitution. His Majesty the King is one of the hereditary rulers of the nine states and the Council of Malay Rulers. His Majesty the King carries out his duties under the Constitution with the advice of the Prime Minister and the Cabinet. The hereditary rulers are the Head of State of his own state and carry out their duties under the advice of their First Minister (*Menteri Besar*). Chief Minister (*Ketua Menteri*) holds the similar responsibilities for the four states without a monarch, namely Penang, Malacca, Sarawak, and Sabah (Official Portal of Parliament of Malaysia, 2021).

The Malaysia's economic status in terms of gross domestic product (GDP) at purchasing power parity (PPP) recorded an estimate of \$978.781 billion in 2021. The consumer price index was 122.502 in 2021 (International Monetary Fund, 2021). The economy has expanded from natural resources in early days to science, tourism, and commerce. According to the Labour Force Survey 2021, there is a total of 16.07 million of people in the labour force, 15.30 million are employed while 768.7 thousand are unemployed (Malaysia Department of Statistics, 2021b). The labour demand statistics in August 2021 showed the major economic activities at private sector establishment included agriculture, mining and quarrying, manufacturing, construction, and services (Malaysia Department of Statistics, 2021c).

Malaysia scored 0.810 in the Human Development Index which puts the country in the very high human development category according to the Human Development Report 2020 (United Nations Development Programme, 2021). Malaysia's score improved because of improved life expectancy average at 76.2 years as compared to 76.0 years in previous year, and Gross National Income per capita at (2017 PPP USD) 27,534 compared to (PPP USD) 27,227 in the previous cycle (United Nations Development Programme, 2021). The Malaysia Abridged Life Tables 2018-2020 that presents life tables generated based on the mortality statistics for the three-year period and mid-year population estimates of Malaysia, documented that a new-born baby in 2020 is expected to live until 74.9 years old. Males and females of 15 years old in 2020 are expected to live until the 73.4 years and 78.2 years old, respectively. For older adults' population, men and women who aged 60 years are expected to live until the age of 78.4 years and 81.2 years old (Malaysia Department of Statistics, 2021d).

Malaysian health care system is governed by the Ministry of Health. Malaysia generally has an efficient and widespread system of health care under the Ministry of Health's vision of "A nation working together for better health". The Ministry aims to assist individuals to achieve, sustain and maintain a certain level of health status and to further facilitate them in leading a productive lifestyle economically and socially. This could be achieved by providing suitable and effective promotional and preventive approaches besides efficient treatment and rehabilitation services. Malaysian healthcare system is divided into government-led and funded public sector and private sector. Public sector is highly subsidised, and patients only need to pay nominal fees (Malaysia Ministry of Health, 2021a).

Overview of Educational System

Malaysian educational system is governed by the Ministry of Education. The vision of the Ministry is “Quality Education Begets Learned Individuals for a Prosperous Nation”, while the mission is “upholding a quality education system that develops individuals to their full potential and fulfills the aspirations of the nation” (Malaysia Ministry of Education, 2021).

The national educational system covers the pre-primary, primary, lower and higher secondary, pre-university, and university education levels. The pre-primary or kindergarten education caters to children between four to six years old. After completion of the pre-primary education, the students move on to primary education at the age of seven years old following the school year and spend six years to complete Standards 1 to 6. Students further progress to secondary education at the age of 13 years old. Historically, students took the Primary School Achievement Test (UPSR) and need to meet the minimum requirement to be eligible to progress to secondary education. In April 2021, this test has been abolished from 2021 onwards (Rajaendram, 2021).

Students can automatically progress to secondary education. Secondary education is divided into lower secondary for Form 1 to Form 3 while upper secondary caters for Form 4 and 5. Students will complete their secondary education by 17 years old. Post-secondary education or more commonly known as pre-university are for students who have completed secondary education with a Malaysian Certificate of Education (*Sijil Pelajaran Malaysia, SPM*). Post-secondary education includes Form 6 which takes one and a half years, matriculation certificate for one year and other equivalent offered by the private higher education institutions (World Education Network, 2021).

According to the Malaysian Ministry of Education (2020), there are 6,215 pre-schools, 7,779 primary schools and 2,439 secondary schools in Malaysia. Of the total primary schools, 75.54 percent are National Schools, followed by 16.70 percent of National Chinese Type Schools, 6.77 percent of National Tamil Type Schools, 0.53 percent of Government Aided Religious Schools, 0.36 percent of Special Education, and 0.1 percent of Special Model (K9). Special Model (K9) is the primary school with secondary level from Form 1 to 3. For secondary schools, majority are Regular Schools (81.43%), followed by 7.38 percent of Government Aided Religious School (GARS), 3.61 percent of Vocational Colleges, 2.83 percent of Fully Residential Schools, 2.46 percent of Religious Schools, 0.86 percent of Form Six College, 0.45 percent of Special Model, 0.37 percent of Technical Schools, 0.25 percent of Special Education, 0.21 percent of Sports Schools, 0.12 percent of Arts Schools and 0.04 percent of *Bimbingan Jalinan Kasih*. Table 1 shows the type and number of primary and secondary schools registered with the Ministry of Education. Besides the schools under the Ministry of Education, there are primary and secondary schools administered by other government and private institutions as listed in Table 2.

Table 1. Type and Number of Primary and Secondary Schools, and Students Enrolment in Ministry of Education.

Type	No of schools			Enrolment	
	Urban	Rural	Total	No of students	Percentage (%)
Primary Schools					
National	2,805	3,071	5,876	2,125,612	7757
National Type (Chinese)	877	422	1,299	511,950	18.68
National Type (Tamil)	369	158	527	80,569	2.94
Special Education	25	3	28	1,351	0.05
Special Model (K9)	1	7	8	2,087	0.08
Government Aided Religious School (GARS)	28	13	41	17,775	0.65
Secondary Schools					
Regular	1,434	552	1,986	1,786,432	89.62
Fully Residential	58	11	69	38,772	1.95
Religious	42	18	60	38,086	1.91
Technical	8	1	9	4,195	0.21
Vocational College	69	19	88	39,306	1.97
Special Education	6	0	6	1,125	0.06
Special Model	7	4	11	9,696	0.49
Sports	4	1	5	1,552	0.08
Arts	3	0	3	942	0.05
Government Aided Religious School (GARS)	139	41	180	67,117	3.37
<i>Bimbingan Jalinan Kasih</i>	1	0	1	52	0
Form Six College	19	2	21	4,979	0.25

Note: Data as of 31 January 2020

Reference: Malaysia Ministry of Education, 2020

Table 2. Type and Number of Primary and Secondary Schools, and Student Enrolment in Other Agencies.

Type	No of schools	Enrolment (No of students)
Primary Schools		
<i>Private institutions</i>		
Academic Primary	66	13,199
International Primary	6	2,112
Religious Primary	59	27,281
<i>Other Government Agencies</i>		
People Religious Primary School (SRAR)	85	27,651
State Religious Primary School (SRAN)	25	10,542
Secondary Schools		
<i>Private institutions</i>		
Academic Secondary	63	14,060
Chinese Independent Secondary Schools	60	79,906
International Secondary	15	5,137
Religious Secondary	38	9,221
Correspondence Secondary School	1	0
<i>Other Government Agencies</i>		
People Religious Secondary School (SMAR)	121	29,649
State Religious Secondary School (SMAN)	76	39,637
MARA Junior Science Colleges (MJSC)	53	35,568
Royal Military College (RMC)	1	449
<i>Private Institutions with Two Levels (Primary and Secondary Schools)</i>		
Expatriate	14	2,358
International	151	59,246
Special Education	15	718

Note: Data as of 31 January 2020

Reference: Malaysia Ministry of Education, 2020

Overview of Malnutrition, Food, and Healthy Diet Practices among School-Aged Children and Adolescents

The 2020 National survey recorded 15.4 percent prevalence of underweight among children between five to 17 years old and it was more prevalent in children from urban areas. The same survey also showed stunting prevalence of 12.7 percent among children and adolescents with higher prevalence found among children residing in rural areas and from household income less than RM1000. Concurrently, the national survey recorded that there were 15 percent of adolescents were overweight while 14.8 percent were obese. Higher prevalence of obesity was primarily observed among children living in urban areas and from a higher household income group (IPH, 2020).

A study assessing the consumption of food groups among children between seven to 12 years old (Koo *et al.*, 2016) showed that the mean intake of all food groups did not achieve the recommended servings by the Malaysian Dietary Guidelines (MDG) except meat/poultry group. Majority of the Malaysian school-aged children did not consume the recommended servings of legumes and milk/dairy products, cereals/grains, fruits, vegetables, and fish (Koo *et al.*, 2016). A cohort study that examined the nutrient intake among adolescents at public secondary schools recorded that the adolescents' energy intake met approximately 66 percent for males at both rural and urban areas while 71 percent for females at rural areas and 76 percent at urban areas (Abdul Majid *et al.*, 2016). These students consumed sufficient proteins and fats as compared to the Malaysian Recommended Nutrient Intake, but insufficient intake observed for nutrients such as carbohydrate, fibre, vitamin D, calcium, and iron (Abdul Majid *et al.*, 2016). Moreover, Norimah *et al.* (2015) reported that only 25 percent of children and 19 percent of adolescents were consuming wholegrain with a mean daily intake of 2.3g/d (SD 5.8g/d) in children and 1.7g/d (SD 4.7g/d) in adolescents. When comparing to the US quantitative whole grain recommendation of 48g/day, the researchers found less than 3 percent of the children and adolescents met this recommendation (Norimah *et al.*, 2015).

Based on the Adolescent Nutrition Survey 2017 findings, the Malay adolescents showed the highest factor scores for the unhealthy dietary pattern i.e., diets derived from foods with high sugar content, oil or fat, salt, and processed food (Man *et al.*, 2020). In contrast, Chinese or Indian adolescents showed the highest factor scores for healthy dietary pattern (diets rich in nutrients, fibres, and protein) and alternative proteins dietary pattern (diets consist of milk and dairy products, legumes and beans) (Man *et al.*, 2020). The evaluation of diet quality among the adolescents by Rezali *et al.* (2015) presented that there was a high prevalence of adolescents (80.7%) who were at risk of poor diet quality. Factors contributing to poor diet quality in Malaysian adolescents were being a male, Malay ethnicity, low self-efficacy of healthy eating, and low availability of healthy foods (Rezali *et al.*, 2015). More effort and initiatives need to target on the dietary practices of the children and adolescents to ensure good and healthy growth and development.

Overview of Policy Framework on School Health and Healthy School Canteens

A. School Health Policy and Strategies

Malaysia's Ministry of Health instituted the School Health Plan in 1967 and the School Health Services in 1975 to provide scheduled visits to pre-schools, primary and secondary schools by the School Health Team. The aims of the School Health Services are to:

- i. Maintain the health of school children at the most optimum level through health promotion, disease prevention, treatment, and referral
- ii. Detect the health problems that can hinder academic achievement of school children and early referral to enable early intervention and placement of students in special education system
- iii. Encourage community involvement to make school a safe and healthy institution that will enable effective learning

The School Health Team is led by a medical and health officer, assisted by nurses, assistant medical officers, health care assistant, and driver. Approximately 1.8 million school children receive health services under this programme every year. The target students are the pre-schoolers, students from Standard 1, Standard 6 and Form 3. Under this programme, the school children will receive preventative health services, health screening, treatment of mild cases and referral to health centre or hospital (Gombak District Health Office, 2021; Malaysian Administrative Modernisation and Management Planning Unit, 2021; Saidatul Norbaya, 2021).

All Standard 1 students will receive a Student Health Record from the Ministry of Education to record the student's health information during the schooling years. The parents are responsible to fill up their children's personal information in this Student Health Record and give consent to the School Health Team to conduct health screenings and immunization for the students. This Student Health Record is kept by the primary school and passed to the student's secondary school when they progress (Gombak District Health Office, 2021; Malaysian Administrative Modernisation and Management Planning Unit, 2021; Saidatul Norbaya, 2021).

Medical and dental examinations are the two main components of the School Health Services. For Standard 1 students, a range of medical examinations is conducted which includes height and weight, eye examination, hearing screening, examinations on heart, lungs, skeleton, personal hygiene and testicular examination for boys and detection for learning disabilities to identify students with reading, writing, mathematics, and reasoning problems. In Standard 6, students will repeat the height and weight measurement, eye examination with additional colour blindness screening, skeletal examination, and personal hygiene. During secondary Form 3, students will repeat the same examinations as Standard 6 with additional hearing screening and an optional adolescent health screening. For children

who are detected with minor health problems during medical examinations such as minor wounds, scabies, worm infections, head lice infection, treatment of fever and flu, treatment will be provided by the doctor. More severe cases such as visual acuity problem, colour blindness, heartbeat problem and suspected scoliosis will be referred to specialists as they require further examinations to confirm the medical diagnosis. Dental health examination is delivered by the School Dental Team on regular visits to primary and secondary schools (Gombak District Health Office, 2021; Malaysian Administrative Modernisation and Management Planning Unit, 2021; Saidatul Norbaya, 2021).

Environmental health service is the third main component of the School Health Services. This component is co-implemented by the Ministry of Health and Ministry of Education. The school environment inspection activities include examination of school infrastructure, vector-borne disease control, hygiene monitoring and school canteen operation. The school canteen policy and guideline are explained in Chapter 11.2 (Saidatul Norbaya, 2021).

Besides the above components, other activities under the School Health Services include School Health Immunization, Health Education, and other health-related services. Standard 1 students are given immunization on Bacillus Calmette—Guérin (BCG), Diphtheria & Pertussis, Polio, Mumps, Measles dan Rubella. Form 3 students will take Tetanus Toxoid. Health education can be conducted in groups or at individual level. Health education in groups is done through campaign or health camps in the school. Students are educated through exhibitions or demonstrations by the health care professionals with the main focus on public health problems associated with school children such as Anti-Smoking Campaign and Healthy Lifestyle. Individual health education is done by the individual counselling during medical examination session such as diet and personal hygiene (Gombak District Health Office, 2021; Malaysian Administrative Modernisation and Management Planning Unit, 2021; Saidatul Norbaya, 2021).

The Supplementary Feeding Programme and the School Milk Programme are the initiatives by the Ministry of Education for primary school children to improve their nutrition and health status. The Supplementary Feeding Programme (Khalidi & Gen, 2020) is an integrated effort intended for primary schools. The general goal is to supplement food provided at home to meet the children's daily meal requirements. The primary aims of this programme are to provide part of the daily protein- energy and other macronutrient by meeting their caloric and personal growth requirements before the onset of puberty and to create opportunities for formal and informal community education on health and nutrition. Students who are eligible for this programme must be Malaysian citizens enrolled in government primary schools or government-aided schools. Students must meet any one the following criteria:

- i. Heads of pupils' households earn less than the poverty line income
- ii. Students in *Orang Asli* (Indigenous people) and Penan schools
- iii. Students with special needs

Under the Supplementary Feeding Programme, meals are provided before the school starts which include breakfast for morning-session students and lunch for afternoon-session

students. If needed, food can also be provided at recess time. Food menus include staple food such as *nasi lemak* (coconut rice), fried mee and *roti canai*. The choice of food is based on food availability and student preferences and will be reviewed every year.

The School Milk Programme (Khalidi & Gen, 2020) is a collaborative programme between the Ministry of Education and local milk producers to provide free milk to all students who need it. The main objectives of this programme are to encourage the habit of drinking milk; to provide milk to students at higher risk of malnutrition; to decrease government expenditure through the involvement of private-sector agencies; to increase knowledge, skills and good practices related to food, nutrition, and health; and, to facilitate the development of communities and the dairy industry involved in the production and supply of milk. School children are given a carton of 200ml chocolate-flavoured milk twice weekly sourced from local milk producers selected by the Ministry of Agriculture and Agro-based Industry (Yang Razali, 2019).

B. Healthy School Canteen Guidelines

Each school in Malaysia has a school canteen. The way the canteens operate depends on the number of students and the school operating time which is either morning session only, afternoon session only or both. School canteen is a place where food and beverages are prepared and stored, sales and purchase, serving and consumption, resting and other leisure activities take place among students, teachers, and other school staff (Nordin *et al.*, 2016). The school canteen is also an effective place to promote healthy and balanced diet to maintain general health. The Malaysia Ministry of Education emphasises on the hygiene, safety and quality of food sold in the school canteen premises in Malaysia (Nordin *et al.*, 2016). To streamline the management and monitoring of school canteens, the Ministry of Education and Ministry of Health have published guidelines and handbook to serve as references to all schools in Malaysia.

Guidelines on Healthy Food Implementation in School (Malaysia Ministry of Health, 2021b) comprises two main chapters, namely: Weight Management Guidelines among School Students, and Food and Beverage Sales Guideline in School Canteens. The objectives of the Food and Beverage Sales Guideline in School Canteens are: i) to ensure the sales of food and beverages in the school canteen complies with the Healthy Food Implementation in School guidelines; ii) to ensure the calorie content of food and beverages are displayed in the school canteen; and iii) to standardise the methods of implementation and monitoring by canteen operators, schools, and healthcare staff. This reference handbook comprises:

- i. List of food and beverages that can be sold in the school canteen with information on portion size and calorie content
- ii. List of food and beverages prohibited from being sold in the school canteen
 - Expired foods, toys-like foods, sweets and chocolates, pickled foods, foods and beverages that contain artificial flavours and colourings, alcohol containing foods and beverages

- iii. List of food and beverages that are not encouraged to be sold in the school canteen
 - Instant noodles, ice cream, coffee and tea, carbonated drinks, creamy or sugar-coated foods, processed foods such as meat burgers, sausages, and nuggets
- iv. Suggestion on list of food and beverages that can be sold in the school canteen by frequency. Foods that can be sold daily:
 - White rice, porridge, *soto*, *mee/ mee-hoon/ kuetiau* in soup, tom yarn, black sauce
 - Steamed fish, fish soup, tom yarn chicken, grilled beef, egg soup
 - Vegetables soup, stir-fried vegetables, tom yarn vegetables
 - Dosai and idli
 - Fresh fruits
 - Boiled crackers/ sweet potatoes/ yarn; chicken/ vegetables pau
 - Soymilk, barley water, red/ green bean soup, malted drinks, milk, fruit juice, yogurt, and mineral water

Foods that can be sold three times a week:

- Coconut rice (*nasi lemak*), fried rice, chicken rice, *lontong*, *nasi berlauk*, *nasi kuning*, *pulut kuning*
 - Fried or curry *mee/ mee-hoon/ kuetiau/ spaghetti*, *laksam*, *mee/ mee-hoon/ kuetiau hailam Or bandung*
 - Fried, curry, soy sauce or spicy sour fish/ chicken/ beef/ prawn/ squid/ egg/ tofu
 - Vegetables cooked in fat, vegetables dal
 - Fried snacks (samosa, pancake, banana/ sweet potatoes/ yam/ shrimp fritters, fish crackers, *Roti canai*, *cakoi*, curry puff)
 - Sweet snacks (malaysian traditional *kuih*)
 - Biscuits
- v. Example of food and drink calorie display in the school canteen
 - vi. Calorie requirement of school students
 - vii. Calorie distribution and daily menu for school students aged 7-9 years, 10-12 years, 13-18 years
 - viii. Monitoring guides on food and beverage sales in school canteen
 - ix. Food and beverage sales monitoring mechanism and indicators in school canteen

Besides the Guidelines on Healthy Food Implementation inside the school, the Ministry of Education and Ministry of Health, with the support of the Ministry of Housing and Local Government, implement another guideline on food and drinks sold outside the school gate

i.e., the Enforcement of Sales Prohibition of Food and Drinks Outside the School Gate by Local Authorities (Malaysia Ministry of Health, 2012). The objective of this guideline is to harmonize the law of local authorities in enforcing the ban on the sale of food and beverages outside the school fence. In general, the sale of food and beverages within 40 meters from the school fence is prohibited for all static hawkers, circulating hawkers and temporary hawkers except those existing sellers who are licensed but they must adhere to the prohibited food and drinks list that is in accordance with the Food Regulations of 1985.

C. Policy Implementation Challenges

The main challenge reported by the Ministry of Education and Ministry of Health in implementing school canteen policies in Malaysia is the incompliance of school canteen guidelines. It is reported that around 40 percent of the schools did not adhere to the guidelines on the type of foods sold in the school canteen especially processed foods such as nuggets, hotdogs, and other unhealthy snacks. Besides, some of the schools did not follow the food price range established by the Ministry of Education. The Ministry of Health also expressed concerns on the safety and quality of foods sold outside the school fence that are beyond the school control.

V

Best Practices of Healthy School Canteens

A. Selection of Schools with Healthy School Canteens and Data Collection

The collection of information from schools featured in this chapter obtained the ethical approval from the Ministry of Education on 18 December 2020. A list of 14 schools comprising primary, secondary and vocational special needs schools were shortlisted. The shortlisting criteria by the Ministry of Education was based on the three recognitions endorsed in 2019. Each recognition, namely: i) Healthy Canteen Practice and Service, ii) Video Production sponsored by Farm Fresh, and iii) ‘Healthy and Fresh’ Canteen, awarded the gold, silver and bronze medal for the schools that met the evaluation criteria. The evaluation criteria consist of a scoring checklist assessed by the panels on the following aspects: food quality, food handlers and qualification, facilities such as equipment and tools, sanitation facilities, water supply, sewerage system, facilities for food handlers, disposal of waste and food waste, physical facilities such as floors, walls, and ceilings, transportations of food, pest control, and staff management and scheduling. The criteria were also in line with the Malaysia Food Hygiene Regulations of 2009.

Five schools were further selected as the model cases of the healthy school canteen in Malaysia. The selected schools were the winners for gold or silver medals, the winners for one or more recognitions, representative of the primary, secondary, and special need schools. This ensures a comprehensive and inclusive presentation of the overall picture of the healthy school canteen practices in Malaysia.

The data compilation adopted a qualitative structured interview method using a standardised interview guide from SEAMEO RECFON. The interview guide was translated from English language to Malay language. Content validation was conducted to ensure the Malay version of the interview guide has the same content and interpretation as the English version. Pilot testing of the Malay version interview guide with a school that was not shortlisted as the model case was carried out. The pilot testing enabled face validation of the interview guide and process evaluation to identify potential challenges during interviews. The research officers conducted the qualitative structured interviews with the five schools. Interviewees were the school principals, school canteen management representative, and/ or canteen operators to gather comprehensive data. Prior to the actual interview, the interview guide was shared with the five schools to allow their respective school principals to gather the relevant documents such as the school canteen policies. The interview sessions were video recorded. Each session took approximately one and a half hours. The conversations were transcribed and further analysed as detailed in the next section.

B. Best practices and lessons learned from the selected schools

1. Sekolah Menengah Kebangsaan Baru Miri, Sarawak

Sekolah Menengah Kebangsaan (SMK) Baru Miri was established on 1 January 1989 at Miri, Sarawak, East Malaysia. SMK Baru Miri is a national secondary school located at Jalan Cahaya, Lopeng, 98000 Miri, Sarawak. The motto of the school is “Towards Excellence”. SMK Baru Miri operates for morning session only. The current school population comprises 76 teachers and 826 students.

SMK Baru Miri has implemented teaching and learning activities that directly and indirectly support the development of students’ character which is health oriented. The school curriculum has incorporated various health education subjects such as Physical Education and Health, Moral Education, Islamic Education, Civic Education and Science. The Physical Education and Health subject is allocated for two hours per week. It offers both theory and physical activity sessions for all students from lower to upper secondary. The school emphasizes school canteen as an important component of the school health programme. It has initiated various programmes to support students’ health behaviour and to create a favourable healthy school culture such as:

- i. Regular health talks and exhibitions from Ministry of Health or external agency.
- ii. Student ambassadors are appointed to promote health related information to school community and visitors.
- iii. Prefects are appointed to monitor the school canteen environment to ensure it is always in conducive condition.
- iv. School Canteen Day with emphasis on healthy food sales led by the parents and teachers’ association (PTA)



Figure 1. Café Rimba.

SMK Baru Miri's school canteen is named *Café Rimba* (translated as 'cafeteria in jungle'). The school canteen adopts a 'jungle' theme because the school aims to inculcate awareness of the environment and nature among the students.

Brief Descriptions of the School Canteen and Its Major Challenges

a) Physical Description of the Canteen

Café Rimba adopts an open canteen concept. It has a wide and conducive dining and learning area for students. It is equipped with adequate and good standard physical facilities such as tables, chairs, food preparation equipment, storage areas, water supply, sewerage system and electrical facility. It can accommodate around 1000 students at one time. It has not experienced any power outage since establishment, but the school is ready with alternative plan if problem arises. *Café Rimba* implements two methods to compost leftover foods (refer to Best Practice No. 3). The school canteen management also takes care of the well-being of canteen staff by allocating rooms for prayer and rest.

b) Meals Service Provided

Café Rimba is only open to students, teachers, and other staffs of the school from Monday to Friday providing breakfast, lunch, and morning snacks. The food menu sold in *Café Rimba* complies with the Ministry of Health guidelines and it is regularly monitored by a District Health Officer. The other routine practice in this canteen is daily food tasting by the canteen operator to ensure the foods sold meet the safety and nutrition standards. The school canteen management puts high emphasis on healthy cooking methods such as steaming, boiling and less deep-frying and no processed food is allowed in the canteen. *Café Rimba* also offers special menu that serve more fruits and vegetables for students who are overweight. The foods are labelled with calories tag, and this increases students' awareness on healthy eating and food choices.

One of the routine tasks performed in *Café Rimba* is the daily inspection by the teacher-on-duty on canteen food preparation, hygiene, and quality by using a structured checklist. If the teacher encounters any misconduct, he/ she will provide immediate feedback to the food handlers and followed by a written report to the school canteen management. Every morning the canteen operator needs to send daily food photo reports to the school management as part of monitoring measures.



Figure 2. Foods with calories tag.

c) Basic Management of the Canteen

The vision of *Café Rimba* is “The school canteen of SMK Baru Miri is committed to provide the best canteen service with five principles: safety, hygiene, health, collaboration and innovative”. The school ensures students are at their best of health by complying to the school canteen policies and commitments which include ensuring students to obtain adequate nutrition in school; ensuring canteen staff are always given information and guidance regarding school canteen management; cultivating innovation using integrated action approach; and involving all school staff, PTA, external agencies, and the local community in effective implementation of health programmes and best practices in this school. SMK Baru Miri school management follows the selection criteria delineated by the State Education Department to select the canteen operator on a yearly basis. The food menu in terms of quality and quantity, food price, previous canteen operation track record, of potential canteen operator tendered, are first evaluated. Selection is made after considering all the above aspects. The school management and the selected canteen operator will then sign an agreement.

Café Rimba has a very structured and detailed organisation chart. The school canteen management committee is led by the school principal and the committee is composed of senior school management team, teachers, students, PTA representative and canteen operator. A list of comprehensive job descriptions of each committee is documented. In addition to the main committee comprising of the chairman, canteen coordinator, secretary and treasurer, there are other special sub-committees with unique roles and responsibilities, i.e., Innovation 3R (Reduce, Reuse, Recycle) sub-committee which plans and implements innovation projects involving students, canteen operator and local community; Health Information Counter sub-committee which conducts body

mass index (BMI) calculation, quizzes, and health information exhibition; and Student Best Practice sub-committee which enlivens student culture with four best practices: washing hands, queuing, reciting prayers and cleaning the table after eating. Regular canteen meetings of the committee are organised once in four months to discuss canteen related issues and generate innovative ideas.

d) Major Challenges

Financial constraint is one major challenge in SMK Baru Miri when managing Café Rimba particularly in carrying out its planned activities and maintaining or upgrading its facilities. The school's strategies to overcome this challenge are to collaborate with the private sectors and local leaders to raise funds, to carry out activities that can generate a source of income to maintain the physical facility of Café Rimba, and to source manpower from parents to help with the maintenance work of the canteen.

Another challenge is the lack of manpower due to high staff turnover rate for the school canteen operation. This leads to difficulty to ensure skillful staff to provide the canteen services. To overcome this challenge, the school provides learning opportunities for canteen operators to attend food handling courses as part of self-development and the canteen operators put more emphasis on the staff welfare by providing staff lounges and other facilities.

The students in SMK Baru Miri are mostly from low socio-economic background; 60 percent of them belong to households with a total monthly income of less than RM2000 (USD 472). The food purchasing power of students is low. This becomes a challenge for the school canteen to modify the menu that is affordable for students amidst the continuous rise in food cost. The school needs to be creative and innovative in fund management to ensure that the canteen can always maintain the food quality and safety for the students.

Best Practices of the School Canteen

Café Rimba upholds the school canteen vision- to provide the best canteen service with five principles: safety, hygiene, health, collaboration and innovative by implementing various strategies since 2017. The school canteen management has implemented innovative 3R projects and activities in *Café Rimba* to increase students' awareness towards environment which are now considered as best practices.

a) NO plastics, NO polystyrene, NO straw policy

Students are encouraged to bring their own containers and utensils from home while dining in the school canteen. They use their own containers, water bottles or cups to pack food and drinks. They will wash their own utensils after finished eating. This best practice has greatly reduced the use of plastic food packaging in the school.



Figure 3. Using own containers and utensils when dining in the canteen.

b) Recycle bins for proper garbage disposal

The school provides recycle bins at every corner of the school and students are trained to dispose garbage according to their garbage category.



Figure 4. Recycle bins for garbage disposal.

c) Food-based environment-friendly projects

Students are empowered to carry out student-led innovative environmental-friendly project such as home garden and hydroponic farming using hand washing water supply system. Students process the leftover food into compost and this compost will be used to fertilize the crops around *Café Rimba* or the school's "home gardens". The canteen management also collaborates with external agency to process leftover foods to feed the stray animals. Students also transform used cooking oil into soap to put at washing areas of the canteen. The school collaborates with the Miri City Council and recycle company to conduct training workshops on food waste management to students and teachers. Students are appointed as project ambassadors to lead the projects. This best practice has reduced the general waste of the school to preserve a healthy school environment.



Figure 5. Transforming used cooking oil into soap project.



Figure 6. Student-led innovative environmental-friendly projects.

d) BMI measurement of students at the Health Information Counter

During recess time, Café Rimba encourages students to measure their BMI and keep track of their health records. Students are trained to be health conscious and well informed on their own BMI. Students will be advised by the student ambassador or teacher of this sub-committee to choose healthier options during recess time if their BMI level does not show good results. This best practice has led to reduced obesity rate in the school.



Figure 7. BMI measurement of students during recess time.

e) **Transforming Café Rimba as a Multi-Purpose Canteen**

Café Rimba is not only a place to sell food and drinks, but it also serves as a centre for knowledge dissemination. The canteen offers a comfortable reading corner for students and teachers to read newspaper, health magazines or books. Interesting activities such as talks by teachers, public speaking or singing events by students are organised in the canteen corner during recess time. The canteen is surrounded by the herb and home garden where the information on the benefits and functions of these plants can be shared with the school community. Through these activities, students and other school staffs have increased awareness and knowledge on personal, general, and environmental health. *Café Rimba* has successfully maintained Grade A.

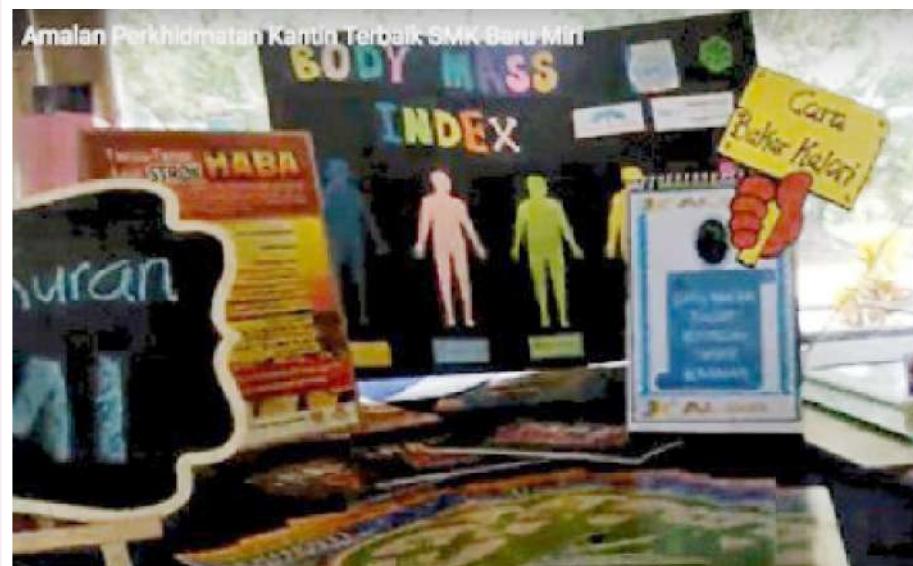


Figure 8. Reading corner.

f) Regular self-monitoring and evaluation

SMK Baru Miri has implemented various efforts to maintain the routine hygienic behaviour of the food handlers and to ensure the safe and nutritious food quality. The school has activated 8 consistent and all year long self-monitoring efforts such as canteen self-assessment programme, self-review checklist, school canteen complaint/ feedback box, customer satisfaction survey, spot check/ surprise inspection by school management and PTA, calculation of food calories, demonstration of healthy food during break time by PTA or external agencies, food handling course and vaccinations for canteen staff. This close monitoring best practice from collaborative effort has created a clean, healthy, and nutritious food environment in the school. Customer satisfaction survey on the aspects of healthy, cleanliness and safety of the school canteen have greatly improved. *Café Rimba* has successfully maintained Grade A and is awarded the Clean, Healthy and Safe (BeSS) award by the District Health Office.

Enabling Factors in Healthy School Canteen Implementation

To ensure sustainability of the best practices in *Café Rimba*, the school has set up a special task force- strategic, tactical, and operational planning (PSPTPO) to monitor the canteen operation. Specific, measurable, and clear short- and long-term key performance indicators on 3R projects are set. The plans, vision and missions of the projects will be shared thoroughly with the parents and local community to garner supports to ensure success and sustainability of these projects.

The school will also ensure that *Café Rimba* always collaborates with external agencies, both private and government. The school initiates discussion with external agencies toward making the school community always updated on the latest knowledge and development in health and cleanliness aspects of the canteen. The school establishes Memorandum of

Understanding (MOU) with these agencies to ensure plans are executed accordingly. To date, the schools has established collaborations with more than 20 agencies.

The school collaborates with the District Health Office to constantly monitor the health and cleanliness aspects of the canteen. The school works closely with the Department of the Environment to maintain the environment protection concepts in *Café Rimba*. The Fire and Rescue Department is invited to give talks on health and safety in the canteen. Besides, the school also partners with the hotel management team or community college to present healthy cooking demonstration to the canteen operator.

In terms of funding, canteen operator, PTA and people's representative are the major contributors to support the expenses and activities of *Café Rimba*. As for the capacity building, the school management is committed to encourage the canteen management committee as well as the school teachers to participate in courses or training workshops on healthy food handling and food choices to collaboratively support the healthy school canteen.

Plans to Sustain School Canteen Operations and Its Best Practices

SMK Baru Miri school management has various plans to improve the school canteen, such as:

- i. Expand canteen ties and networks with various external agencies to improve the quality of canteen services
- ii. Conduct joint efforts with the canteen operator for obesity reduction programmes among the students
- iii. Expand the innovation and environmental conservation projects in the canteen by involving students from colleges
- iv. Open the canteen service for outsiders for example the parents of students. This approach aims to promote the canteen in the community thus expanding the market segment
- v. Upgrade the services of *Café Rimba* to be on par with the hotel in terms of physical features, eco-friendly layout, and food variety to provide quality service to all users or visitors.

2. Sekolah Kebangsaan Pauh Jaya, Pulau Pinang

Sekolah Kebangsaan (SK) Pauh Jaya was established on 1 January 2002 at Permatang Pauh, Pulau Pinang, West Malaysia. SK Pauh Jaya is a national primary school located at Taman Pauh Jaya, 13500, Permatang Pauh, Seberang Perai Tengah, Pulau Pinang. The motto of the school is “Knowledgeable Insightful”. SK Pauh Jaya operates for morning and afternoon sessions. The current school population comprises 96 teachers and 1335 students.

The vision of SK Pauh Jaya is “Sustainable conditions for students' physical, mental and spiritual balance”. The school highly emphasizes on students' health and has set up a Health Unit under the management of Student Affairs Department. This Health Unit works closely with the District Health Office, Ministry of Health to coordinate the students' immunization programme, health, and dental screenings. The school also collaborated with the District Health Office in 2019 to conduct a health programme called SMARTFIT to target 30 obese students.

Once a month, the District Health Officers came to the school to carry out activities such as aerobics dance, healthy eating talks, and healthy food demonstration. There is one subject called Physical and Health Education that is mandatory in the school curriculum for all students from primary Standard 1 to 6, one-hour session each week. The school also identifies the school canteen as an important component of the school health programme. SK Pauh Jaya's school canteen is named *Café Sireh*. *Sireh* or betel plant is both considered as ornamental as well as for cooking for its peppery taste, and commonly found in Asian countries.

Brief Descriptions of the School Canteen and Its Major Challenges

a) Physical Description of the Canteen

Café Sireh adopts open canteen concept. It is equipped with adequate and good standard physical facilities such as tables, chairs, food preparation equipment, refrigerators and storage areas, water supply, sewerage system and electrical facility. It can accommodate around 800 students at one time. The school canteen management has implemented regular upgrading to ensure good functioning and positive environment of the canteen such as painting and decoration of canteen areas.



Figure 9. Café Sireh.

b) Meals Service Provided

Café Sireh is only open to students, teachers, and other staffs of the school from Monday to Friday providing breakfast, lunch, and morning and afternoon snacks. The canteen operator must follow the food menu determined by the State Education Department. If they would like to add new menu, they need to adhere to the guidelines on the type of foods allowed to be sold in the school canteen.



Figure 10. Types of food sold in Café Sireh.

The school canteen management committee in this school is known as Canteen Unit. To ensure the food safety and hygiene of the school canteen, the teachers who serve in the Canteen Unit committee will conduct daily inspection on the canteen using a structured graded checklist. The checklist includes raw food ingredients selection and preparation, food preparation and packaging, rubbish disposal, and overall hygiene of the physical facility. If the checklist is graded unsatisfactory, the teacher in charge will give advice or suggestions to the canteen staff for further improvement.

In addition, the canteen operator is required to complete a self-assessment checklist and this exercise is monitored fortnightly by the Senior Teacher of the Student Affairs Department. Besides, the PTA representatives will conduct spot check at the school canteen to monitor the canteen operation, food price, and types of foods sold in the canteen. In 2019, the PTA had conducted around 10 inspections and the health authority had conducted 2 inspections on SK Pauh Jaya canteen.

c) Basic Management of the Canteen

The vision of *Café Sireh* is “The school canteen of SK Pauh Jaya is committed to create an exclusive canteen by providing quality food to meet customers’ satisfaction and emphasizing the aspects of hygiene and healthy eating”. The school canteen operator is selected through tendering system. The school management signs an agreement with the selected canteen operator that details the canteen operation, monthly rental, types of food, food menu and action plans if the terms and conditions are not followed strictly by the canteen operator. The Canteen Unit is led by the school principal and the committee comprises of the senior school management team, teachers, and canteen operator. The Canteen Unit monitors the canteen operation and services and holds a meeting to resolve complaints from canteen customers.

d) Major Challenges

The main challenge with canteen operation and service faced by SK Pauh Jaya is the effort to maintain the canteen cleanliness and hygiene. The school’s strategies to overcome this challenge are to ensure that the canteen operator always maintain

the cleanliness of the premise; to establish a teacher monitoring schedule to evaluate the cleanliness of the canteen every day; to educate students about the importance of canteen cleanliness; and, to maintain a good relationship and open discussions with canteen operators and staff to overcome any issues in the school canteen.

Best Practices of the School Canteen

SK Pauh Jaya school canteen management has implemented two best practices since 2019 in *Café Sireh* with the main objective to improve the nutritional status of the students.

a) Monthly Healthy Menu Promotion in Social Media

The canteen operator promotes a monthly healthy menu through WhatsApp group and the school Facebook page. The promotion usually starts 5 days before the end of the month, and parents who are interested can make booking and payment to the canteen operator for the upcoming month. Through this programme, parents do not need to provide pocket money to their children to purchase food and can ensure that their children are consuming healthy meals from the school canteen. This project was the initiative of the canteen operator, and it is closely monitored by the school management. This project has sensitised the school children towards healthy food options and parents are more relieved as they know the types of food their children eat at school daily. With the involvement of parents in this project, the school canteen operator must be more vigilant on healthy food preparation. Overall, the canteen has managed to serve healthier and safer foods for students.

b) Financial Allocation to Support Supplementary Feeding Programme

SK Pauh Jaya takes part in the Supplementary Feeding Programme which is an initiative by the Ministry of Education to provide additional food to students with low socio-economic background to improve their nutritional status. To expand this service to more students and aims to provide more nutritious foods, the school canteen management allocates additional food budget from their daily sales. This has brought great benefits to students especially those from poor family background.

Enabling Factors in Healthy School Canteen Implementation

To ensure sustainability of these best practices, the school management needs to work very closely with the school canteen management to overcome any challenges in the canteen operations. The external collaboration of SK Pauh Jaya mainly focuses on the joint effort with the District Health Office. This collaboration sustains the health and dental screening as well as giving of health talks to students to increase health awareness. Occasionally, there will be external food company that gives away free drinks to students. This type of activity is usually upon the external company request, and it is not part of school collaboration or initiative. In terms of funding, canteen operators and PTA are the major contributors to support the expenses and activities of the school canteen.

Plans to Sustain School Canteen Operations and Its Best Practices

SK Pauh Jaya school management envisions to improve the canteen operation and service by:

- i. Improving canteen facilities such as expanding the space areas for food selling
- ii. Continuing extensive collaboration with the District Health Office in monitoring food hygiene and quality
- iii. Establishing a Canteen Unit within the school PTA structure

3. Sekolah Menengah Kebangsaan Malim, Melaka

Sekolah Menengah Kebangsaan (SMK) Malim was established on 3 January 2001 at Melaka, West Malaysia. SMK Malim is a national secondary school located at Bertam Malim, 75250, Melaka. The motto of the school is “Visionary Commitment”. The current school population comprises 109 teachers and 1438 students.

The vision of SMK Malim is “Quality Education, Educated Population, Prosperous Nation” in adherence to the Ministry of Education policies. Formal health education of students is integrated in mandatory subjects such as Science, Biology, Physical and Health Education, Home Science and Life Skills. Topics on food pyramid, food groups, nutrients and functions are taught in these subjects from secondary Form 1 to 5. For the informal health education of students, the school joins a health programme called *Standard Kecergasan Fizikal Kebangsaan SEGAK* (National Physical Fitness Standards), organised by the Ministry of Education. Under this programme, teachers need to conduct fitness test, measure body mass index and heart rate of the students twice a year and to submit a report to the ministry. The school uses this data to plan for the student health development programme, for instance, the school provides dietary advice and exercise programmes to target weight loss for students who are obese.

Under the Student Affairs Department with the theme “*Keselamatan, Keceriaan dan Kesihatan, 3K*” (Safety, Fun and Health), there are regular health programmes in collaboration with the Ministry of Health such as vaccination programme, health and dental screening, health talks and exhibition, Co-curricular Day, and Canteen Day. The health talks are organised monthly and cover a wide range of topics such as general health, mental, emotional, spiritual health, and personal appearance. The school regards the school canteen as an important component of the school health programme.

Brief Descriptions of the School Canteen and Its Major Challenges

a) Physical Description of the Canteen

SMK Malim school canteen adopts an open canteen concept. It is equipped with adequate basic facilities in good conditions such as tables, chairs, food preparation equipment, storage areas, water supply, sewerage system and electrical facility. It can accommodate around 400 students at one time. The canteen operates for five recess sessions, each recess session for each secondary level with a duration of 30 minutes each. This arrangement can avoid crowding in the canteen to ensure students have a comfortable recess time to replenish nutrition.

The school management is very strict with the requirement on students to canteen staff ratio that is 150:1 and the canteen operator is compulsory to follow this requirement. If the daily report by the teacher-on-duty notes incompliance, the school principal will provide warning and advice through the Student Affairs Department. The canteen operator also takes care of the well-being of canteen staff by allocating room with air-conditioning for prayer and rest.



Figure 11. Physical infrastructure of the SMK Malim school canteen.

b) Meals Service Provided

SMK Malim canteen is only open to students, teachers, and other staffs of the school from Monday to Friday providing breakfast, lunch, and morning and afternoon snacks. The food menu conforms strictly to the canteen food and beverage guidelines of the Ministry of Education and Ministry of Health. For each new canteen operator, the school management holds a briefing to inform the guidelines to the canteen staff. The guidelines are also printed and distributed to all canteen staff. Fast food, processed food, soft drinks, sugary drinks, and food with colourings are not allowed in the canteen. The canteen management committee monitors the canteen operation based on the teacher's daily inspection report.



Figure 12. Meals served in canteen.

c) Basic Management of the Canteen

The vision of the SMK Malim school canteen is “A canteen with a cheerful environment where all students can rest and obtain nutritious food for energy to continue the school session”. The school canteen operator is selected through tendering system following the guidelines by the Ministry of Education. Ten best canteen operators who meet the criteria are selected. The canteen management committee further evaluates these ten candidates through regular meetings and to shortlist four canteen operators. Then the committee conducts interviews and selects the best canteen operator.

The criteria include the food price, ability and willingness to adhere to the guidelines by the ministry, financial stability, hygiene, and management style. Each tender lasts for two years of service and will be considered for another year if the school management is satisfied with the canteen operator. After selection, the school management signs an agreement with the selected canteen operator that details the canteen operation, monthly rental, types of food and food menu. The canteen operator must follow the food menu determined by the State Education Department. The school management can terminate the contract if the canteen operator violates the terms and conditions.

The school canteen management committee is led by the school principal and the committee comprises of the Senior Teacher of the Student Affairs Department and other teachers. The teacher- on-duty inspects the canteen operation and service daily especially on the canteen cleanliness and food sales. The teacher-on-duty needs to document a daily inspection report. The reports are compiled and sent to the State Education Department every month. The canteen management committee holds weekly meeting to review the monitoring reports and resolves any complaints from teachers and students. The committee also organises meetings with all canteen staff once every four months. Besides internal monitoring, the State Health Department conducts surprise inspection once in two years. The school canteen makes improvement based on the feedback given by the State Health Department.

d) Major Challenges

One of the challenges encountered by SMK Malim in school canteen management is the financial constraint. The financial resources mainly depend on the discretion of the canteen operator as there is no fixed allocation from the State Education Department for canteen management. The school management needs to establish good relationship with the canteen operator and to discuss the school's intentions in creating the best infrastructure and canteen management. It is also challenging for the school to select a good, competent, and efficient canteen operator that is in line with the school's aspirations in managing the canteen. Hence, setting high standards during the selection of canteen tender is crucial.

Other challenge is to ensure that the canteen provides balanced and healthy food to students. The school management needs to garner the support from the teacher to establish a canteen monitoring schedule to consistently evaluate the food menu served to the students. Warnings will be recorded if there is violation of instructions. The school canteen is also equipped with a suggestion box so that students and school staff can suggest improvements.

Best Practices of the School Canteen

SMK Malim school canteen management has implemented a few best practices to improve the food quality of the canteen and to transform the canteen to a multi-purpose learning areas besides serving as a conducive dining place. These best practices make the canteen a fun, cheerful and healthy place for students, which is very much in line with the school canteen vision.

a) Food Quality Evaluation by Hotel Chefs and School Students

SMK Malim invites regular visitation of the chefs from hotels in Melaka to evaluate the food quality in the school canteen. The chefs provide feedback on the food menus, suggest food modification to improve the taste and appearance of food, and demonstrate healthy cooking recipes. The school invites their own students from the Home Science subject to evaluate the food quality in the canteen. This effort enables the students to translate the knowledge learnt in Home Science subject into practice. With this best practice, the food quality of the canteen can be maintained.

b) Canteen as Centre to Nurture Talent

Aside from serving as a place for obtaining good nutrition, the canteen of SMK Malim is also a place to nurture talent. There is a corner in the canteen named as "Malim Got Talent" where the students take turns to perform by singing, public speaking, storytelling, science experiments, problem- based learning presentations and other talents on the stage. This activity aims to develop self-confidence in students. Students will be given a token of appreciation in the form of money sponsored by the PTA or union and students can use the money to buy healthy foods only. This best practice has successfully trained students' talents and their confidence level when performing on the stage.



Figure 13. “Malim Got Talent”.

c) Canteen as Health Information Dissemination Centre

SMK Malim canteen sets up a BMI Corner to measure students’ body weight status during recess time. The corner is also equipped with food pyramid model and health information materials to emphasize the importance of healthy food choices to students. The reading materials are updated monthly to enrich students’ knowledge and practice on healthy eating. Students have become more health conscious and able to make healthier options during recess time.



Figure 14. Health Information Corner.

d) Canteen as Centre to Cultivate Moral Values

The setup of Integrity Corner in the canteen aims to inculcate good moral values such as honesty and trustworthiness in students. Food and drinks are sold in this corner without a food seller stationed in the corner, and students put the money into a box when they purchase the food.

Every Wednesday, students come to school in their society uniforms such as school youth cadet and serve in the school canteen. Students who are on duty will show good dining etiquette by welcoming teachers and students during recess time. These best practices have resulted students with good values such as integrity and politeness and be a role model to each other.



Figure 15. School youth cadet serve in the canteen.

Enabling Factors in Healthy School Canteen Implementation

To ensure sustainability of the best practices, SMK Malim actively collaborates with governmental health sector to organise programmes on nutrition and health. Private sector such as milk company will sponsor free low-fat milk to the school canteen to encourage adequate nutrition for school children.

The canteen operators, PTA and union, school allocation to Student Affairs Department, school stakeholders, and teachers are the major contributors to support the expenses and activities of the school canteen. To support students with poor family background, the school canteen provides free foods to 20 students every day. If more students require the food cost support, the school will use the fund contributions by PTA or union. As part of capacity building, the school management will send the teachers who sit in the canteen management committee to attend training courses or workshops on food handling organised by the State Education Department.

Plans to Sustain School Canteen Operations and Its Best Practices

SMK Malim school management envisions to improve the canteen operation and service by:

- i. Developing materials highlighting the importance of school hygiene and recycling efforts
- ii. Creating nutrition campaign and increasing more fruits in the food menu
- iii. Creating a Health Information Corner emphasizing food calories, creating a “Self-Mirror” Corner along with BMI Corner to monitor students’ weight status
- iv. Developing more fire safety programmes in the school environment including the canteen

4. Sekolah Kebangsaan Bandar Tasik Kesuma, Selangor

Sekolah Kebangsaan (SK) Bandar Tasik Kesuma was established on 1 January 2003 at Selangor, West Malaysia. SK Bandar Tasik Kesuma is a national primary school located at Jalan 7/1, Bandar Tasik Kesuma, 43700 Beranang, Selangor. The motto of the school is “Knowledge, the rays of life”. SK Bandar Tasik Kesuma operates for morning and afternoon sessions. The current school population comprises 126 teachers and 2531 students.

The vision of SK Bandar Tasik Kesuma is “Quality Education, Educated Population, Prosperous Nation”. This school has two formal subjects related to health, namely Health Education for a 30-minute session and Physical Education for two 30-minute session per week. Students also receive regular health and nutrition talks delivered by the State Health Department. These activities are arranged upon the school’s request and initiatives. The school organises the Cleanest Class Competition to inculcate the values of keeping a clean and comfortable learning environment as an important part of preserving good health. The school also considers the school canteen as an important component of the school health programme. “*Keps Blue Café*” is the name of the SMK Bandar Tasik Kesuma’s school canteen with blue as its theme colour.



Figure 16. *Keps Blue Café*.

Brief Descriptions of the School Canteen and Its Major Challenges

a) Physical Description of the Canteen

Keps Blue Café adopts an open canteen concept. It is equipped with basic facilities such as tables, chairs, food preparation equipment, storage areas, water supply, sewerage system and electrical facility. It can accommodate around 1000 students at one time. The canteen has not experienced any technical operating issues, yet the canteen is ready with contingency plans for shortage of water, electricity, or food supply.



Figure 17. Physical infrastructure of *Keps Blue Café*.

b) Meals Service Provided

Keps Blue Café is only open to students, teachers, and other staffs of the school from Monday to Friday providing breakfast, lunch, and morning and afternoon snacks. *Keps Blue Café* follows strictly the canteen food and beverage guidelines by the Ministry of Education and Ministry of Health. The teacher-on-duty particularly monitors the foods that are not allowed to be sold in school canteen such as fast food and unhealthy snacks during inspection. The canteen operator needs to follow the food menu stated in the agreement and if they wish to enhance or add more variety, they need to apply to the school principal to ensure the food menu complies with the guidelines.

c) Basic Management of the Canteen

The vision of *Keps Blue Café* is “Towards optimizing customer satisfaction and providing a therapeutic environment” while the school mission is “Maintaining the function of the canteen as a one-stop centre in building prosperous human capital through healthy food”. The school canteen operator is selected through tendering system following the Ministry of Education guidelines. The main criteria to select the canteen operator is the proposal on food menu and price. After selection, the school management signs an agreement that details the canteen operation with the selected canteen operator.

SK Bandar Tasik Kesuma operates the canteen service based on the Customer Service Charter. The school canteen management committee is led by the school principal and the committee comprises of the Senior Teachers from various departments, teacher coordinator, other teachers, and the canteen operator.

The canteen operator is required to conduct self-assessment based on a review checklist. Teachers-on-duty need to inspect the food preparation, conduct food tasting and monitor the canteen operation during recess time. They also need to document the daily and weekly monitoring report to be sent to State Education Department every month. Feedback or warnings are given to the canteen operator instantly if they found any incompliance or unpleasant incidents (e.g., cockroaches in the canteen area, hair found in the food or stale food ingredients). The canteen is equipped with a feedback box where students and parents can provide feedback to improve the canteen service. One teacher is tasked to take charge of collecting the canteen complaints and communicate them to the canteen operator to make improvements.



Figure 18. Food storage area.



Figure 19. Food preparation area.

d) Major Challenges of Keps Blue Café

The challenges encountered by SK Bandar Tasik Kesuma in school canteen management are the financial constraint and shortage of manpower. To overcome these challenges, the school plans to seek sponsorship from private corporates, government agencies, or politicians and tap additional human resources from PTA members, alumni, and university students.

Best Practices of the School Canteen

SK Bandar Tasik Kesuma always strives to enhance the canteen facilities to make the canteen a one-stop centre for getting nutrition, instilling good moral values, and discovering students' talents by implementing several best practices indicated below.

a) Canteen Self-Service Approach

Food and beverage stalls at *Keps Blue Café* are on self-service basis. Students take the food and put the money into a container prepared nearby the food. The students will also count and take the change from the container directly. This initiative has managed to inculcate honesty and trustworthiness in students as well as to resolve manpower shortage issue.



Figure 20. Canteen self-service approach.

b) Environmental Conservation Projects

Keps Blue Café has implemented an innovative “cup-bin electric sensor” to collect used plastic cups. This initiative improves efficiency of canteen space while inculcates values on environmental conservation. Health information are pasted on the students' tables to serve as reminders for students. Students are trained to clean the table and return the dishes to the designated areas.

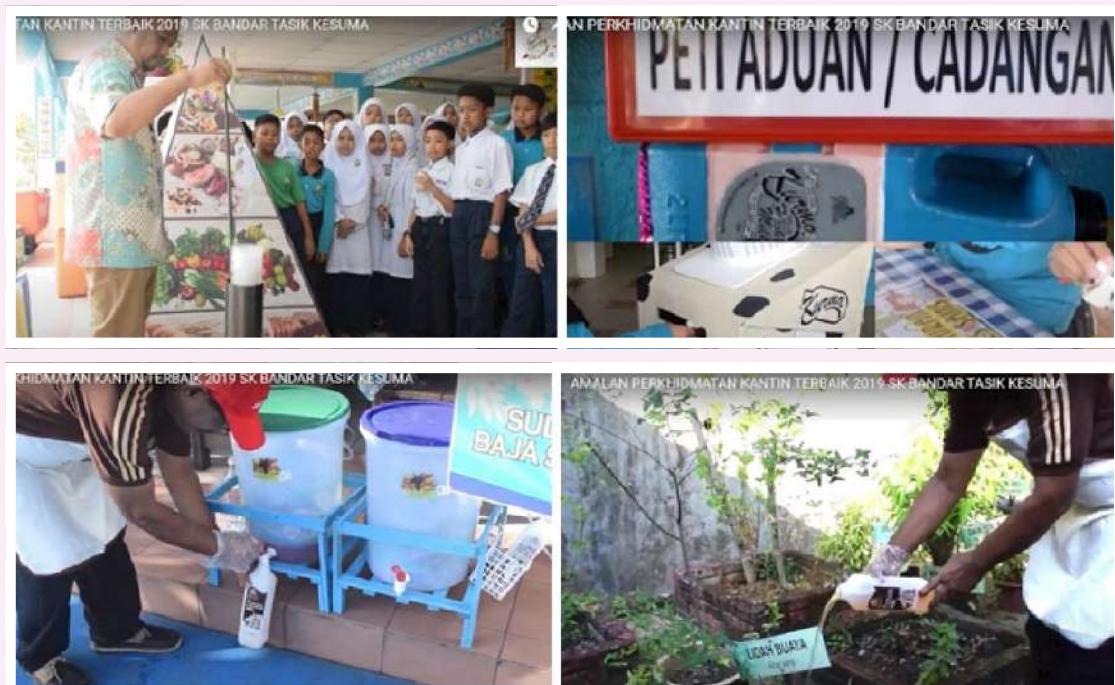


Figure 21. Environmental Conservation Projects.

There are various recycle projects such as transforming used box into feedback box in the canteen and producing organic fertilizers and soaps as part of the collaborative efforts with external parties. These efforts collectively reduce the general waste of the school and most importantly everyone in the school upholds this positive attitude and contributes to obtain the mutual benefits.

c) Keps Blue Café as a Multi-Purpose Canteen

SK Bandar Tasik Kesuma school canteen serves as a learning place for Moral Education subject, student remedial class, health information dissemination and students' performance. During recess time, students can perform public speaking at the Speaking Corner of the canteen. There are various health and nutrition information provided at the Reading Corner. Students are educated to maintain healthy and balanced diet using a giant food pyramid model. Celebrations such as birthday, farewell, cultural events are also held in the canteen. *Keps Blue Café* has become an efficient and multipurpose activity zone to serve food, for leisure and learning, and to create an interactive social hub.



Figure 22. Canteen as interactive social hub.

d) Keps Blue Café Donation Corner

As an effort to support the students from poor family background, *Keps Blue Café* is equipped with a donation cupboard where the teachers and parents can donate food or basic needs to students or community members who require this support. This initiative, besides helping the poor, also instils good values such as showing sympathy and compassion, mutual support, and respect to each other.



Figure 23. Café Donation Corner.

Enabling Factors in Healthy School Canteen Implementation

In addition to the collaboration with governmental education and health departments to ensure sustainability of canteen best practices, the school establishes joint effort with higher education institution such as Japan Mara Institute for the cup-bin project. The school collaborates with the Community Garden Group to make organic fertilizers from leftover foods. The organic fertilizers are used for enriching the school garden. PTA members work

with the students to produce organic soaps from plants. These soaps are used for hand washing in the canteen. Other private collaborators include milk company and soap company that organise events to educate good nutrition and general health in the school. The PTA, teachers, people's representative or politicians, governmental agencies, and canteen operator are the major contributors to support the infrastructure, expenses, and activities of the school canteen.

Plans to Sustain School Canteen Operations and Its Best Practices

SK Bandar Tasik Kesuma school management envisions to improve the canteen operation and service by:

- i. Enhancing the facilities for students and staff
- ii. Creating student committee in the school canteen management

5. Sekolah Menengah Pendidikan Khas Vokasional Indahpura, Johor

Sekolah Menengah Pendidikan Khas (SMPK) Vokasional Indahpura was established on 22 March 2004 at Kulai, Johor, West Malaysia. SMPK Vokasional Indahpura is a national special education boarding school located at Sisiran Indahpura 36/6, Indahpura 81000 Kulai, Johor. The motto of the school is “Knowledgeable, skilful, independent”. The current school population comprises 99 teachers and 190 students. The students enrolled in this school are the students with special needs who have completed secondary Form 3 level.

The vision of SMPK Vokasional Indahpura is “Quality Education, Educated Population, Prosperous Nation”. This school has two formal subjects related to health, namely: Health and Physical Education and Food Preparation Assistant. Each session lasts for 40 minutes per week. For informal health education, the school joins the health initiative by the Ministry of Health called the *Standard Kecergasan Fizikal Kebangsaan SEGAK* (National Physical Fitness Standards). The school has identified 30 student who are obese, and the school organises a special programme for these students called “Zero Obesity and Healthy Lifestyle Programme”.

In this programme, the school conducts nutrition and lifestyle talk and exercise sessions, collaborates with school canteen to distribute meals using quarter-quarter-half food plate concept, emphasizes on healthy menu, and measures students' weight status every month. Besides this initiative, the District Health Office also delivers health, nutrition and food preparation talks and health screenings for students. The school also emphasizes the school canteen as an important component of the school health programme.

Brief Descriptions of SMPK Vokasional Indahpura Canteen

a) Physical Description of the Canteen

The SMPK Vokasional Indahpura adopts an open canteen concept. It is very spacious and equipped with sufficient facilities with good conditions such as tables, chairs, food preparation equipment, storage areas, water supply, sewerage system and electrical facility. It can accommodate around 1000 students at one time. The school regularly refurbish the canteen and upgrade defective canteen facilities. The school has

good waste management system. The students' hostels are equipped with water purifier system. To date, the school has not experienced any power or water outage. The canteen staff welfare is well supported.

b) Meals Service Provided

SMPK Vokasional Indahpura canteen is only open to students, teachers, and other staffs of the school from Monday to Friday providing breakfast, lunch, and morning and afternoon snacks. The canteen operator complies with the canteen food and beverage guidelines of the Ministry of Education and Ministry of Health. Unhealthy food such as sugary foods and carbonated drinks are not allowed to be sold in the school. The school canteen management committee regularly monitors the food preparation and ensures that the food sold in the canteen are balanced meals.

c) Basic Management of the Canteen

The school canteen operator is selected through tendering system following the guidelines of the Ministry of Education. The main criteria to select the canteen operator are the food quality, safety, and price. The canteen operator's track record will be considered. After selection, the school management will sign an agreement with the selected canteen operator that details the canteen operation. Each contract will last for one year and the school will open the tender again. Warnings are given to the canteen operator if they found any incompliance, for instance, the food sold to students does not follow the menu as stated in the agreement.

The school canteen management committee is led by the school principal and the committee comprises of the senior teachers from various departments, other special committees that oversee the notice and information board, decoration, and food quality. School canteen management committee conducts weekly meetings to discuss canteen and food related matters as well as to review the students' diet and exercise plans for the obesity programme. The committee also holds two general meetings in a year to streamline the canteen plans or other main agenda.



Figure 24. Food menu and price list.

d) Major Challenges

The main challenge faced by SMPK Vokasional Indahpura in school canteen management is the financial constraint. There is no specific financial provision to the Student Affairs Department. The department has to work with the school management to secure financial allocation to improve the canteen facilities. The department also plans to collaborate with the non-governmental organisations, PTA, and community to jointly organise activities to improve the quality of school canteen management.

Best Practices of the School Canteen

SMPK Vokasional Indahpura school canteen management has implemented two best practices with the main objective to inculcate leadership skill in the students with special needs and to transform the canteen to become a conducive learning area.

a) Online Food Ordering and Awesome Manager

SMPK Vokasional Indahpura has implemented a new initiative in selling food to students called “Online Food Ordering and Awesome Manager”. For each class, students will rotate to become the Awesome Manager and Runner. Awesome Manager is responsible to take food ordering and payment from the students and submit the food order compilation form to the class teacher. The class teacher will order food to the school canteen through an online system. A runner is appointed to gather the students’ food containers and send to the school canteen before 7.30am in the morning and take the food-filled food containers from canteen back to the class during recess time. This initiative has assured food safety and empowered the students with special needs to become leaders, to be independent and having good teamwork.



Figure 25. Online food ordering.



Figure 26. Awesome Manager.

b) Health and Physical Education Class and Co-curricular Activities at the Canteen

SMPK Vokasional Indahpura is very spacious, some classes especially Health and Physical Education class and co-curricular activities can be conducted at the canteen. Various health, nutrition, and food safety information are presented at the canteen tables, walls, and notice boards. These resources are updated regularly by the canteen management committee and serve as the teaching materials during Health and Physical Education class. This serves as first-hand experiential learning site for the students.



Figure 27. Health Information Corner.

Enabling Factors in Healthy School Canteen Implementation

To support healthy canteen implementation, the main external collaborator of SMPK Vokasional Indahpura is the District Health Office that has conducted regular health and nutrition programmes. To empower the students with special needs to be independent and equipped with life skills, the school organises Canteen Day, Co-curricular Day or Entrepreneurship Day that bring in external agencies to expose them to these students' ability to create job opportunities for the students upon graduation. The students are trained to become food sellers or open food stalls during these school events. The school also collaborates with hotels, bakery shops or food company to provide food preparation practical and trainings to the students.

The SMPK Vokasional Indahpura school canteen funding is mainly from the PTA and teachers' contribution. Furthermore, the school manages the funding by combining various department allocations to organise school events (e.g., health motivational programme is co-organised by the Physical Education and Health Unit and Counselling Unit). As part of capacity building, the school management sends the canteen staff and teachers who sit in the canteen management committee to participate in training courses and workshops on food handling. Those who attend such activities will need to share their learning with their colleagues when they return for work.

Plans to Sustain School Canteen Operations and Its Best Practices

SMPK Vokasional Indahpura school management envisions to improve the canteen operation and service by:

- i. Providing more variety of nutritious meals in the school canteen
- ii. Making the school canteen to be a mini library for the students

Lessons Learned and Recommendations

A. Lessons Learned

The school canteens in Malaysia conform to a set of guidelines by the Ministry of Education and Ministry of Health. Structured guidelines, continual support, and consistent review system by the authority is very important for the school to coordinate the canteen management starting from the selection of canteen operator up to the food sold to students. School compliance to guidelines and school internal monitoring effort serve another important factor to ensure successful canteen operation to serve healthy food to students. This element is strongly reflected in the school canteen practices of the model cases discussed in the previous chapter.

The model cases share the same characteristics that the school has a well-defined canteen management committee that includes the canteen operator, the school principal, and teachers. The roles and responsibilities of each committee members are clearly delineated. The committee shares the mutual goals to support the healthy canteen to ensure good nutrition of students. With the teachers' cooperation, the regular monitoring system assures the food safety and hygiene in the canteen. Transparent communication between the school authority and canteen operator helps in resolving problems. Maintaining good teamwork, trust and relationship are substantial to ensure a successful canteen operation and service.

Financial aspect is a common challenge identified in school canteen management. The school management can establish external collaboration for financial and other forms of support with suitable stakeholders who can align with the school vision to ensure good nutrition of students. The schools are innovative in financial management, for instance, expanding canteen services to parents, generating funds by organizing thematic canteen events, consolidating fund allocation from various departments to run school events.

The school canteen has expanded its original roles beyond providing nutrition for the school community. The schools have implemented various innovations or unique best practices with specific objectives such as i) to inculcate the awareness of environmental conservation, ii) to nurture talents among students, iii) to promote monthly healthy menu through WhatsApp group and the school Facebook page to parents to ensure children consume nutritious meals in school, iv) to inculcate honesty and trustworthiness in students through self-service and self-payment, v) to show empathy towards friends who are less fortunate and helping each other, vi) to ensure food safety and empower students with special needs to become leaders, independent and good teamwork through online food ordering programme.

B. Recommendations

In addition to the school canteen best practices of selected schools discussed here that are feasible to be adopted in other schools in Malaysia and Southeast Asian countries, other recommendations are further described below:

1. Expanding school collaboration with non-governmental organisations and those in the industry sector that share mutual goals can contribute to successful school canteen operation. The school can serve as the ‘adopted school’ of these organisations as part of their corporate social responsibility function in terms of supporting the capacity building of canteen staff, teachers, and students towards achieving and sustaining a healthy and functional school canteen.
2. School canteen can serve as a target area for research and development by the Ministry of Education and Ministry of Health in the aspects of student health and nutrition. Research and continuous education interventions on food safety and diseases can be conducted in school canteen to improve the health and environmental quality of the whole school community.
3. Adding a nutritionist position in the school organisational set is worth considering. A nutritionist in school can oversee the canteen services and provide instant guidance to the canteen staff. A nutritionist can tailor the menu to the school students’ needs and can design and implement comprehensive nutrition programmes for the school.
4. To empower students to make informed choices, the nutrition traffic light labelling can be introduced. The healthy food can be placed at the top of the menu with appealing pictures and coloured or bold names and identified with a ‘green’ dot. Food that should be eaten in moderation can be highlighted in ‘yellow’ dot and ‘red’ dot for food that should be consumed less. Healthier foods can be placed at the front most position of the food stall and within easy reach of students. This effort can increase exposure to students to make healthier food choice.
5. To promote healthy eating habits among students, the school can involve students as part of the school canteen committee to co-create canteen activities, canteen environment and decoration, as well as food menu. These activities can also be incorporated as part of the students’ assignments in the curriculum. Students can be given themes in creating food menu and to be considered as one of the foods to be sold in the school canteen. Moreover, students can initiate projects for the Health Information Corner such as updating the reading materials, decorating the canteen with healthy eating theme, and developing promotion materials on healthy foods to be sold in the canteen. Co-creation strategy can empower students to be active learners and be more receptive on healthy eating aspect as they take ownership and pride in their effort.

VII

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Geographic and Sociodemographic Information

The Republic of the Union of Myanmar, formerly known as Burma, is a sovereign and the largest country located in the northwesternmost part of mainland Southeast Asia. The country has a total land area of 653,290 km² which is divided into 21 administrative subdivisions, which include 7 regions, 7 states, 1 union territory, 1 self-administered division, and 5 self-administered zones (Wikipedia). Nay Pyi Taw, the third largest city of Myanmar, is now the capital city and serves as the country's new administrative centre.

The current population of Myanmar is 54.8 million (United Nations, 2021), taking up 0.7 percent of the total world population and standing at 26th global ranking position. About 31.4 percent of the population live in urban areas, and Yangon is the most populated city in Myanmar with nearly 4.5 million people, followed by Mandalay with over 1.2 million residents. The country's population density overall is approximately 83 people per square kilometre and it has an annual population growth of 0.67 percent. Myanmar has a fertility rate of 2.17 births per woman, with over 2,500 births and over 1,200 deaths per day. Myanmar people's average life expectancy is 67.78 years, and the median age is 29.0 years. The country's literacy rate is at 75.6 percent.

Myanmar has 135 ethnic groups officially recognised by the government, in which the Bamar accounts for 68 percent of the population, followed by the Shan (10%), Kayin (7%), and Rakhine (4%). The official language used is Myanmar language, with some ethnic groups using their own languages. The majority of Myanmar people are Buddhist (87.9%), the rest are Christian (6.2%), Muslim (4.2%), Animist (0.8%), Hindu (0.5%), other (0.2%) and none (0.1%).

The Gross Domestic Product (GDP) of Myanmar was worth 76.19 billion US dollars in 2020, representing 0.7 percent of the world economy (World Bank, 2020). However, Myanmar's economy is expected to contract about 18 percent in 2021 Fiscal Year, due to Myanmar's ongoing political turmoil and worsening situation of Covid-19 (World Bank's Myanmar Economic Monitor, July 2021). It would mean that the country's economy is going to be about 30 percent smaller, leading to the sufferings of people's lives, livelihoods, poverty and future growth.

According to UNDP Human Development Report 2020, Myanmar scored a human development index value of 0.583 in 2019. This puts the country in the medium human development category and positioning it at 147 out of 189 countries and territories.

Overview of Educational System

Myanmar's current basic educational system comprises of five years of primary education (Kindergarten to Grade 4), four years of lower secondary (Grade 5 to Grade 9) and two years of upper secondary education (Grade 10 and Grade 11). Under the Department of Basic Education within the Ministry of Education (MoE), there are currently 47,363 basic education schools in Myanmar, with approximately 9.26 million students. A significant percentage of students get access to basic education through monastic, private, community and other types of schools.

Through Alternate Education (AE) of the MoE, Myanmar also provides Non-formal Primary Education Equivalency Programme (NFPE EP) for out-of-school children and a Summer Basic Literacy Programme (SBLP) for adults. By 2016, the NFPE EP has been implemented in 89 townships where it has reached 11,234 learners. The SBLP was restarted in 2013 and it reached 46,478 learners in 2014. Moreover, the MoE, and the Ministry of Labour, Immigration and Population in collaboration with the private sector have been providing technical and vocational education and training (TVET) at secondary and post-secondary levels in Myanmar. In 2016, there were 372 technical and vocational education and training centres across the country.

Myanmar has 171 higher education institutions, including colleges and universities. In the 2015 academic year, there were 225,178 students studying full-time in higher education institutions under the MoE, while an additional 411,164 students were accessing higher education through Distance Education Universities.

According to the National Education Law (2014) and National Education Law Amendment (2015), the education reforms across the national educational system focus on the right of all citizens to free, compulsory education at the primary level; establishment of a standards-based education quality assurance system; expansion of the basic educational system to 13 years; support for the learning of nationalities' languages and culture; and greater decentralisation within the educational system.

The National Education Strategic Plan (2016-2021) was developed through applying eight best practice principles in strategic planning, which are evidence-based, consultative, quality-focused, integrated, measuring change, costed, accessible and aligned. The National Education Strategic Plan (NESP) (2016-2021) sets the goal of "improved teaching and learning, vocational education and training, research and innovation leading to measurable improvements in student achievement in all schools and educational institutions". The Ministry of Education has committed to achieving the goal by the end of the year 2021, focusing on the nine transformational shifts as follows:

- 1) Preschool and kindergarten education
- 2) Basic education- access, quality and inclusion
- 3) Basic education curriculum
- 4) Student assessment and examinations
- 5) Teacher education and management

- 6) Alternative education
- 7) TVET
- 8) Higher education
- 9) Management, capacity development and quality assurance. Overview of Malnutrition, Food, and Healthy Diet Practices among school aged children and adolescents

According to UNICEF Myanmar (2017), about 37 percent of the population are living below the poverty line, and consequently, many children and mothers in Myanmar are struggling to receive adequate nutrition. UNICEF reported that the prevalence of stunting among children under five in Myanmar dropped from 35.1 percent to 29 percent between 2009 and 2016. This, however, is still significantly high compared to the prevalence in some states or regions which is 41 percent. This demonstrates that about 4 out of 10 children do not reach their full potential in life.

The underlying causes of malnutrition are the lack of sustainable livelihoods, food insecurity and lack of access to other basic social services. The contributing factors for child undernutrition include inadequate access to health services, inadequate hygiene and sanitation, and limited knowledge about optimal health and nutrition behaviours. It is widely known that undernutrition has major impacts on children's future health, growth and development, and poor diets are the major cause of child stunting, or low height for age. The table below shows the most recent data on indicators of micronutrient deficiencies in Myanmar.

Table 1. Indicators and prevalence of micronutrient deficiencies in Myanmar.

	Indicator	Prevalence rate %
Anaemia	Anaemia among children 6-23 months	>80.0 ¹
	Anaemia among children under 5	64.6 ¹
	Anaemia among non-pregnant women ages 15-49	45.2 ¹
	Anaemia among pregnant women	71.0 ²
	Anaemia among adolescent girls	26.0 ³
Vitamin B1/ (Beriberi)	Vitamin B1 deficiency among pregnant women	6.8 ⁴
	Vitamin B1 deficiency among lactating mothers	4.4 ⁴
Vitamin A	Estimated prevalence of Vitamin A (low serum retinol) deficiency among children 6-59 months	30.1 ⁵
	No. of children (6-59 months) supplemented with Vitamin A	55.9 ⁶
Iodine	% of households consuming adequate iodized salt	68.8 ⁷

¹NNC & UNICEF, 2005 (referenced in MNPED & UNICEF, 2013); ²NNC & UNICEF, 2005 (Referenced in MOH, 2013); ³NNC-DOH Survey, 2003 (referenced in MOH, 2013); ⁴NNC-DOH Survey, 2002 (referenced in MOH, 2013); ⁵NNC, 2009 (referenced in MOH, 2013); ⁶UNSCN 2011; ⁷MICS 2009-2010; ⁸NNC, 2011 (Referenced in MOH, 2013)

Overview of Malnutrition, Food, and Healthy Diet Practices among School-Age Children and Adolescents

A. Current Conditions of School Canteens

Myanmar has adopted the concept of health promotion in school settings since the beginning of Global School Health Initiatives in 1996. The health promoting school programme was introduced into existing school health services to promote health standards for all students including acquiring the skills and knowledge they need to adopt a healthy lifestyle. The MoHS and the MoE of Myanmar jointly have been reforming school health programme with a greater emphasis on health promotion and health literacy. The MoHS has been implementing health promoting school under the slogan: “*A health promoting school is a school constantly strengthening its capacity as a healthy setting for living, learning and working.*”

In order to promote healthy school procedures, the Handbook of School Health in Myanmar was published to help school teachers to be familiar with healthy school practices and to apply them at their respective schools. In addition, it can help to achieve one of the MOE’s missions to “Ensure inclusive and quality education for all and promote lifelong learning”, which focuses on the knowledge and education required to have a healthy lifestyle and to promote the healthy behaviour of students. One of the guidelines in the handbook says that school-based nutrition and healthy practices must be promoted to achieve the aims of fulfilling the needs of nutrition of teenage girls and boys in Myanmar, and ending the different forms of malnutrition in Myanmar. As provided in Annual Public Health Statistics of 2013, 2014 and 2015 by Department of Public Health, the implementation ratio of Health promoting school-related activities across the country can be seen in Table 2.

Table 2. Ratio of Health promoting school-related activities.

Indicator	2013	2014	2015
% of schools examined for school health care	91.8	92.9	92.8
% of primary school children receiving school medical Examinations	87.7	92.0	91.5
% of schools with the full standard ratio (50: 1) of fly-proof Latrines	81.6	83.4	84.8
% of schools with access to clean water	80.4	80.4	82.5
% of schools with nutritional promotion activities	55.0	61.6	65.7
% of schools with health promoting school activities	35.4	34.8	38.8

In terms of school canteens, almost every school in Myanmar has a school canteen. However, only a few schools have met the existing standards of the school health policies and adopted the healthy school canteen guidelines (See Chapter 2). In other words, the implementation of healthy school canteens is still underway and progressing slowly, mainly due to the limitations of the human resources and poor school management system. Cleanliness of school canteens, personal hygiene of school canteen staff, and safety of food sold at school canteens are mentioned as the important measures to be taken by respective departments and organizations.

B. School Canteen Roles and Significance

In Myanmar, the education policy makers have recently paid more attention to school canteens in the implementation of healthy school practices. According to the Handbook of School Health in Myanmar (2018), the procedures for a healthy school canteen are being carried out under the two main tasks as follows:

- 1) Cleaning the school environment, and
- 2) Improving school children's nutrition and food safety

The Ministry of Health and Sports (MoHS) has laid out rules and regulations to be followed by school canteens in order to ensure that school canteens are clean and compatible with healthy school practices. School canteens are considered to play a significant role in attaining the goals of creating a healthy and safe environment for school children and modelling them how to have a healthy lifestyle and healthy diet in their everyday life.

IV

Overview of Policy Framework on School Health and Healthy School Canteens

A. Policies on School Health

Myanmar's school health policy is generally aimed at developing the health status of the country's school children. Under this aim, the specific objectives are as follows:

- 1) For school children to get used to the healthy lifestyle.
- 2) For schools to provide healthcare service to school children, school staff members and school communities according to "health promoting school approach".
- 3) To improve national health standards via school health policy.

In order to make the policy effective, strategies are laid out and carried out by the authorities from MOE, school principals, teachers, parents and external organizations. These strategies include:

- 1) Defining roles and responsibilities of school healthcare staff, and school staff members about school health.
- 2) Organizing the school health committee and defining their roles and responsibilities.
- 3) Designing and implementing school health procedures consisting of:
 - i. Promoting school-based health education
 - ii. Cleaning school environment
 - iii. Protecting from diseases
 - iv. Developing school nutrition and improving food safety
 - v. Providing school healthcare
 - vi. Cooperation with the public and growing healthy habits in public from schools counseling and social support
 - vii. Giving training and doing research
 - viii. Physical education and sports
- 4) Streamlining the implementation of healthy school projects
- 5) Other procedures related to implementing healthy schools involving
 - i. Drug-free schools
 - ii. Mosquito-free schools selecting model schools
- 6) School healthy week activities
- 7) Monitoring and evaluating school health strategies and procedures.

B. Healthy School Canteens Guidelines

The Handbook of School Health in Myanmar (2018) lists the eight guidelines for healthy school canteens as follows:

- 1) To sell nutritious food at an affordable price for students
- 2) To use covers for the food and snacks sold at canteens, to use a trash can in each shop, to have enough soap and water for preparing food and doing dishes
- 3) To instruct the school canteen staff to do dishes with soap, and to have at least three buckets and to check them regularly
- 4) To have the canteen and food inspected by school principal and school canteen management team on a daily basis
- 5) To get the health of canteen staff occasionally checked by the Department of Health
- 6) To restrict selling the ready-made food at school canteens
- 7) To ensure the canteen staff keep animals out of the kitchen
- 8) To take necessary actions and inform the Department of Health when the water and food are found to be unsafe.

C. Policy Implementation Challenges

Despite the healthy school initiatives in Myanmar, a number of challenges are being encountered in implementing the school health policy and strategies at schools in Myanmar. Healthy school project could be implemented only in a few schools in the main cities in Myanmar. The Handbook of School Health in Myanmar (2018) listed the main factors contributing to the slow implementation of the project as follows:

- 1) Many schools in Myanmar have the problem of not having enough staff.
- 2) School staff members including teachers have too much workload to take part in school health procedures.
- 3) It takes a lot of time, money and effort to successfully implement the project.
- 4) It requires the cooperation and collaboration of school principal, school authorities, school staff, teachers, students, parents and external organizations.
- 5) Not all schools are willing or ready to change the old school canteen system and procedures.
- 6) It is hard to change people's perceptions and habits that are well-rooted.
- 7) Many people in small cities and rural areas do not have much knowledge about health and nutrition.

The above-mentioned factors are the main challenges which prevent the successful implementation of the school health policy and strategies at schools in Myanmar. One more issue raised by many teachers during the interview is how to control the food shops outside the area of schools and the foods they sell. It is necessary for the policy makers and school health authorities in Myanmar to consider how to deal with the difficulties and to find the best ways to overcome the challenges during the implementation.

Best Practices of Healthy School Canteens

A. Selection of Schools with Healthy School Canteens and Data Collection

When selecting schools that have the best healthy school canteens in Myanmar, SEAMEO CHAT firstly designed the criteria that mainly looks at school profile, management of school canteens, school canteen practices and sustainability. After designing the criteria, it was then submitted to MOE for the approval of the criteria. In selecting the schools which have the best healthy school canteen practices, the ministry looked into the following factors:

- 1) Each school's profile (including the school's reputation, the number of school health awards received)
- 2) The school's health policies and commitment
- 3) Commitment and management of the school canteen
- 4) Structural organization of the school canteen
- 5) Human resources for managing the school canteen
- 6) Infrastructure and facilities of the school canteen
- 7) Food quality at the school canteen
- 8) Daily practices at the school canteen
- 9) Partnership and collaboration with external organizations
- 10) Capacity building of teachers and other education staff in supporting healthy school canteen.

Based on the abovementioned factors, the MoE of Myanmar selected 10 schools which have the best school canteens in Myanmar. As the next step, the SEAMEO Regional Centre for History and Traditions (CHAT) contacted the principals and team members of the selected schools and arranged a meeting with them. During the meeting, each selected school gave a presentation on their school's health policies and practices, and their canteen's structure, management, policies, strategies and practices. Each presentation was followed by the discussion session. After the meeting with the selected schools, SEAMEO CHAT staff and the writer selected three out of the ten schools as the model schools which have the best school canteen practices to be featured in this book.

B. Best Practices, Major Challenges, and Future Plans of Selected Schools with Healthy School Canteens

1. Basic Education High School 2, Sangyoung

Basic Education High School, No. 2, Sangyoung, which is a girls' school, was established in 1926 and it is situated in Yangon. It has 67 teachers and a student population of 2,900. The school is functioning along the MOE's vision "to create an education system that will generate a learning society capable of facing the challenges of the Knowledge Age".

The school's motto is "Let's try to be intelligent, smart and clever ladies". Their school health policies aim to educate students about health, to develop good habits for a healthy lifestyle and for a healthy environment around them, and to enhance the school-based health education.



Figure 1. BEHS 2 Sangyoung.

Brief Description of The School Canteen and Major Challenges

The school canteen is located separately from the school campus, which means it is not very close to school buildings or classrooms. It is a spacious, ventilated and clean canteen (See Fig. 2) with 20 shops selling 40 different types of healthy food including Myanmar traditional snacks. All the shops are situated in a row and the school provides space where students can sit down and eat food. Each shop has a glass container to store food in order to keep it away from insects and flies. All the canteen staff are obliged to wear a clean uniform with an apron, a chef's hat and hand gloves. There are lights and fans installed at the canteen. Trash cans and sinks are provided for each shop. The canteen runs a self-service system which allows students to get their food at any shop they like and eat somewhere.



Figure 2. School canteen of BEHS 2 Sangyoung.

The school has formed an internal management committee for the school canteen with its stakeholders but also collaborates with respective health departments and external organizations such as Regional Department of Health, FDA. Both internal and external management committee have inspections on food safety and hygiene of the canteen staff. Moreover, the school assigns duties to teachers and students to regularly check the canteen to make sure that it is clean and tidy all the time. The school is currently working on the affordable school meal plan, which mainly aims for students who cannot bring the lunchbox to eat nutritious lunch at an affordable price. The school tries to operate the canteen from Mondays to Fridays by cooperating with school communities.

There are some major challenges the school has been facing especially due to the two shifts, which are time constraints to do cleaning before the second shift, limited human resources to do regular inspections, cooperation of all stakeholders, budget of the school and control of the food stalls and shops outside the school.

The rationale to improve the school canteen is to nurture healthy and intelligent students with a good knowledge of nutrition and healthy diet, and with a great interest in nutritional development activities. With this rationale, they have the specific objectives: (1) to have students live a healthy lifestyle, (2) to create a good and safe environment for students, (3) to educate students about nutrition of their everyday lunch, (4) to have students enjoy their traditional food, (5) to have students attend the class regularly, (6) to inform students disadvantages of ready-made and junk food and to reduce the rate of nutrition deficiency, (7) to prevent over-nutrition problems and to develop students' healthy habits, (8) to raise health standards of the students, (9) to have students take part in school nutrition activities for all-around development, and (10) to prevent health problems such as obesity and diabetes.

Best Practices of The School Canteen

a) Junk food free canteen policy

Having a junk food free canteen is considered to be very important to the school and they have a strict policy against selling ready-made, and junk foods such as instant noodles, carbonated drinks, unhealthy food and snacks containing chemicals. This policy, introduced in 2015, aims to educate students about the negative effects of eating junk foods and to lower the rate of nutrition deficiency, obesity, diabetes, etc.



Figure 3. Junk food free canteen.

In implementing this junk food free policy, the school has been conducting a number of activities that support the junk food free canteen (See Fig. 3). The shop vendors at the canteen are not allowed to choose what they want to sell, but they are given the list of food to be sold at their respective shops. All food and drinks sold at the canteen must not contain any ingredients that are not approved by FDA (See Fig. 4). Actions are taken against the shops which do not follow the school canteen rules and regulations. The actions include paying fine, closing the shop for days, and closing down the business. In addition, they include the lessons related to health, food and nutrition in the syllabus of the social science in order to develop students' health knowledge and their character development which is health-oriented. In order to keep the junk food free canteen in the long run, the school works together with food and drink sellers at the canteen by having regular meetings and making negotiations.



Figure 4. FDA inspection at the school canteen.

b) Organizing health talks and health-related competitions for school children

The school often invites external organizations such as FDA to provide health education and talks at school (See Fig. 5). The main aim is to keep giving health and nutrition knowledge to school children and to encourage them to eat healthy food. The school also holds health-related essay competitions in both Myanmar and English for students and awards the prize winners every year. Such competitions expect that students read more about health knowledge and more students become motivated to take part in health-related school campaigns and activities.



Figure 5. Health talk for school children.

c) Plastic-free day once a week

The school prohibits the use of plastic bags or cups/ plates at the school canteen since 2019. Instead, paper or recyclable cups and containers are used by the food sellers during the plastic free day (See Fig. 6). By doing this, both school canteen staff and school children will acquire the habit of using less plastic and more recycled products in the future to contribute to the betterment of the surroundings.



Figure 6. Plastic-free day campaign.

Impacts and lessons learned

The school has managed to run the junk food-free canteen well despite the challenge to change the well-rooted mindset and habits of people. With concerted efforts and cooperation with the stakeholders, the school has achieved the objectives of the policy after several months. Having a junk food free canteen has allowed school children to enjoy healthy food and snacks and the school was able to introduce more traditional snacks to them. The policy has helped students develop their healthy habits to get a healthy lifestyle. The provision of affordable school meals has also solved the problem of busy families who are not able to prepare lunch for their children.

Health-related school activities not only support the survival of the healthy school canteen but also raise students' awareness of health and nutrition. The shops at the canteen are getting used to the healthy measures and procedures proposed by the school and the authorities. However, it still needs regular checking and inspection by the authorities to make sure that they keep healthy standards in preparing food and selling food.

Plans to Sustain School Canteen Operations and Its Best Practices

The school has committed to continuously implement the junk food-free and the plastic-free canteen best practices. It would also consider using environmental-friendly or recyclable cups and plates. Moreover, the school would like the school-meal program available for everyone and make the plan more successful by doing a collaboration with parents, teachers, personnel and canteen staff. To promote and intensify health education among students, teachers and personnel, the school plans to establish more collaboration with the stakeholders such as parents and non-governmental organizations who share the vision of developing healthy citizenry in Myanmar.

2. Basic Education High School 2, Latha

Basic Education High School No. 2, Latha, was established in 1886. It is also a girls' school, which is located in Yangon. Currently, it has 49 teachers and 2,033 students. The school operates along with the MoE's vision "to create an education system that will generate a learning society capable of facing the challenges of the Knowledge Age". The school has also its own motto of "Moving towards the global standard with healthy women".



Figure 7. BEHS 2 Latha.

Brief description of the school canteen

The school has two canteens with 12 shops each. The shops are located indoors in a clean and big building and the shops are positioned opposite to each other on the first floor of the building. The school canteen has appropriate health-related mottos and rules and regulations printed and hanging on the wall (See Fig. 8). There is an open space created for students to sit outside and temporary roof is provided to prevent school children from any weather conditions (See Fig. 9).



Figure 8. Health-related posters at canteen.



Figure 9. Canteen outdoor area.

Moreover, every shop at the canteen is instructed to sell food that contains the three main food groups, use covers for selling food, use cleaning utensil, not to use cracked cups and plates, set an affordable price, have their own trash can, do dishes with soap and water, clean the whole canteen monthly and yearly, and do mosquito spraying. The shops can also submit to the committee about the food they want to sell and the committee takes it into consideration and decides on it. Each shop has a different menu of healthy food and drinks for breakfast and lunch.

There is a school health committee composed of internal stakeholders that takes care of checking for the food safety and hygiene of the canteen and its staff. The school also works hand-in-hand with external organizations such as Regional Department of Health, FDA, and UCDC and they have occasional checks on the school canteen (See Fig. 10).



Figure 10. FDA and UCDC inspection at canteen.

In addition, teachers and student volunteer to conduct daily checks of the food, canteen staff and students eating at the canteen. If a shop does not meet the criteria or a student does not obey the rules such as leaving leftovers on the table, the committee members give warnings or take necessary actions against them.

The school canteen's regulations have been working well despite some challenges which are mainly concerned with limited human resources, commitment of the stakeholders, effective management of the school canteen.

In developing a healthy school canteen, the school is geared toward establishing a clean and hygienic school canteen. The school believes that it is important for school children to get access to clean and nutritious food for them to be strong and healthy and perform well in their studies. The rationale to promote their school canteen is intended to achieve the objectives to (1) give students nutritious food, (2) develop students' healthy habits, (3) train students to live in accordance with rules and regulations, and (4) enhance students' learning.

Best Practices of the School Canteen

Having the defined rationale and objectives, the school sets the criteria for a clean and healthy school canteen and makes sure that these criteria are met accordingly. Their activities involve renovating the shops with the school fund, providing basic canteen facilities such as sinks, trash cans, checking the health condition of the canteen staff, educating them about the personal hygiene, giving them health education, surprise checking by the school health team, and taking actions against the shops breaking the rules. The school has identified three best practices as follows:

a) Selling fruits and vegetables from the school garden

The school has a very big garden with a variety of fruits and vegetables grown and taken care by teachers, students and canteen staff on a regular basis (See Fig. 11). Under the management of the school health committee, the school canteen sells fresh fruits and vegetables from the school garden and they can even sell lunch box at a very affordable price. Moreover, funds made from selling fruits and vegetables and affordable lunch boxes are also used to renovate the canteen and to buy some equipment and facilities needed for the canteen.



Figure 11. School garden.

b) Provision of an affordable lunch box plan for students and teachers

Started in 2019, the best practice has been reported to be very helpful to both students and teachers, especially when they do not manage to bring their lunch for different reasons. With the affordable lunch box plan, students and teachers do not have to worry about their lunch, but they can enjoy healthy lunch at a low cost at the school canteen. The canteen prepares different healthy menu for affordable lunch box every day and makes sure to include the main food groups in the lunch box (See Fig. 12). The canteen usually prepares 100 lunch boxes every day, depending on the demand of students and teachers. Normally, they are sold out at the end of the day.



Figure 12. Affordable lunch box.

c) Displaying of healthy and traditional foods sold at the canteen

As the market for junk food is getting bigger and its huge influence on the school children, it has become very important to promote healthy food as well as traditional food and snacks at schools. The school is doing a good job of displaying healthy food to persuade the children to buy and eat healthy and traditional foods and snacks using colourful packaging materials and designs to persuade the children to buy and eat them (See Fig. 13). This practice has increased the demand for healthy and traditional food among the school children.



Figure 13. Display of traditional food at shops.

Impacts and lessons learned

The school has maintained a clean and healthy environment due to the continuous dedication and commitment by the school authorities and the active participation of the school communities and collaboration of the external stakeholders. As an outcome, the school canteen has been practicing healthy canteen procedures, becoming a standardized clean and healthy school canteen. This is found to have had a positive impact on the school children's eating habits and growth as documented on a monthly basis. Students have gained more health and nutrition knowledge from their lessons, from their teachers, from the health talks and even from the canteen. For the canteen staff, they have become more aware of health education and selling safe and healthy food to students. The canteen staff now care more about their personal hygiene by keeping their body and hands clean, wearing the clean clothes and apron, putting on gloves while selling food, and making their shops clean at all times.

Plans to Sustain School Canteen Operations and Its Best Practices

The school plans to initiate the junk food free program and to sell nutritious breakfast and lunch at a reasonable price to school children. Especially for Kindergarten and Grade I students, the school would like to arrange lunch boxes to make sure they eat three main food groups every day and later expand it school wide. Moreover, the school will require regular health checks of food sellers. The school will also do daily cleaning of the canteen instead of monthly cleaning. To address the challenges mentioned in the previous section, the school works together with more teachers and parents, and plans to have regular meetings and workshops for the continuous development of the school canteen. Moreover, the school tries to get more support and assistance from the external organizations such as Regional Department of Health, FDA, and UCDC to maintain the clean and healthy school canteen. With the help of some external support, the school health team plans to obtain expertise and strategies for the effective management of the school canteen despite its constraints.

3. Basic Education High School 2, Bahan

Basic Education High School, No. 2, Bahan was established in 1965 and it is situated in Yangon. It has 90 teachers and over 3,200 students. Under the MoE's vision "to create an education system that will generate a learning society capable of facing the challenges of the Knowledge Age", the school has its motto, which is to "nurture students to become good citizens who are disciplined, bright and useful for the society".



Figure 14. BEHS 2 Bahan.

Brief Description of The School Canteen

The current school canteen was donated by parents of the school children in 2004. It is in a separate building and has more than 10 shops selling different types of healthy food and drinks. The canteen is quite spacious, clean and well-ventilated and holds many students at one time. It also provides tables and chairs for school children to use in eating their food. The shops are positioned in a row on both sides and each shop has a wide space. At the entrance of the canteen, one can see the posters of the main food groups and about the healthy food and diet (See Fig. 15).



Figure 15. School canteen at BEHS 2 Bahan.

The school canteen is built in the way that it can get the natural light in the daytime but it is also facilitated with florescent lights. The canteen also has flies-catching machine (See Fig. 16), big trash cans (See Fig. 17) in order to make sure that the canteen keeps clean and tidy every day.



Figure 16. Fly catcher machine.



Figure 17. Big trash cans.

All the canteen staff have to be medically checked regularly to be able to work at the canteen and they are obliged to wear their identity card with the health check approved at all times. The food sellers are required to wear a chef's hat, an apron and hand gloves. The food sold at the canteen must be from the three main nutritious groups and the school strictly prohibits selling expired food and food with a high proportion of Monosodium Glutamate, powder dye, and or chemicals. They also make sure that the food sold is not too oily nor salty. The staff are asked to wash fruits before selling and only fresh fruits are allowed to sell and to use for making fruit juice.

With regards to the school canteen management, the school has formed the internal school canteen management committee comprised of the school principal, teachers and parents and also has been working together with external organizations such as FDA and Regional Department of Health. The challenges the school has been facing mainly deal with human resource problem, time constraints for cleaning during the shift of schools, limited budget of the school and the junk food stalls outside the school campus.

The school is carrying out the school health policies of the government with the rationale of living a healthy lifestyle, possessing a happy and healthy family life, and producing good citizens with physical and mental power for the country. To achieve the rationale, the school is working on the following objectives: (1) help students gain the right health knowledge, change their behaviour and employ good health practices through health education in order

to own a happy and healthy life, (2) have students pass the right health practices to the parents and people in their community, (3) create a better and cleaner school environment, (4) develop each student's personal hygiene, (5) produce healthy and intelligent youths, and (6) find and cure health problems and diseases of students early. The school puts the canteen at the centre for students' life, who are future leaders of the country, and offers clean, fresh, healthy and nutritious food. The uniqueness of this school's healthy canteen is in provision of traditional, acceptable, safe and nutritious food.

Best Practices of the School Canteen

a) Prohibiting the selling of junk food, food or drinks including chemicals, food not approved by FDA

The school laid out the rules and regulations to be followed by food shops at the canteen, with an emphasis on food safety, quality of food ingredients, and nutrition values of the food sold, which is considered to be one of their school canteen best practices. The school strictly prohibits the selling of junk food, food or drinks that contain harmful chemicals, food not approved by FDA and those without labels/ ingredients written in Myanmar or English in order to make sure food nutrition and food safety at the canteen. The internal management committee does the daily inspections with the use of an evaluation form with criteria for the safety of food and canteen and cleanliness of the canteen staff (See Fig. 18). Every after inspection, the committee reports it to the school authorities and it is evaluated on a daily basis. In addition, FDA and Regional Department of Health conduct occasional inspections on safety of food and hygiene of the canteen staff.



Figure 18. Daily inspections by the committee at canteen.

b) Promotion of traditional food among the school children

The school encourages the food vendors to sell healthy traditional snacks once a week (See Fig. 19). Vendors are encouraged every week to prepare different traditional foods in a healthy and attractive way to persuade students to try them. Vendors are required to get the approval from the school management on the traditional food they are going to sell. The school's nutrition team checks the quality and nutrition value of these traditional snacks.



Figure 19. Traditional snacks sold at school canteen.

Their aim of introducing Myanmar traditional food and snacks is to give students two main messages, i.e., (1) local food is healthy and delicious, and (2) it is important to preserve and promote them as part of the country's culture and tradition. It can be said that the school has made a considerable achievement in introducing traditional snacks to the school children. It was found that students seem to enjoy traditional snacks which are prepared and decorated nicely and the demand is getting higher.

c) Organising healthy food and traditional food cooking competitions at the school

Their intention is not just to excite students about the extra school activities or competitions but also to get students' attention on healthy food and traditional food (See Fig. 20). Parents of the school children from each grade normally take part in the competitions and they work together with other parents on their team to decide which traditional food they are going to prepare. The school decides on a particular type of healthy and traditional food which the contestants should cook. Such practice is really welcomed by students, parents and teachers so they hold the cooking competition occasionally.



Figure 20. Cooking competition at school.

Impacts and lessons learned

The school found it very challenging to convince the food shop vendors to sell the traditional, acceptable, safe and nutritious food. The school has made its concerted efforts in building the capacity of the food shop vendors and persuading students to buy and eat traditional food. As an outcome, the school has made a significant progress of introducing traditional food to the students and selling safe and nutritious food at the canteen. It has helped students to realize that the traditional foods are not only healthy but also delicious. Students could apply their health and nutrition knowledge in their real life. They demonstrated a good knowledge of three main food groups and they could relate it to the subjects they learn. For example, students managed to run a school health showroom (See Fig. 21), applying their knowledge in connection with the social science subject they have learnt in 2019-2020 academic year.



Figure 21. School health showroom.

Plans to Sustain School Canteen Operations and Its Best Practices

The school plans to improve their health policies and healthy school canteen practices, focusing on providing traditional, acceptable, safe and nutritious food to school children. To do this, the school will request class coordinators and teachers to give the health talks, especially on the importance of eating safe and nutritious food and how traditional foods are delicious and good to eat, on the school assembly day every week. The school is committed to maintain a clean and safe environment inside and outside the canteen by forming groups of students and teachers to clean their respective school building every Friday evening. Another plan is to create insect-free classrooms and dormitories.

The school also plans to conduct health and nutrition lessons integrated into the social science subject. With the cooperation of regional clinics and hospitals, the school has a plan to get students vaccinated for the seasonal flu and other diseases. The school would like to have regular health talks given by medical experts about seasonal flus and different types of nutrition of food including traditional food. The school will work together with parents to provide the three main food groups to their children in their everyday meals and to promote more traditional food and snacks to students.

Lessons Learned and Recommendations

A. Lessons Learned

The implementation of school health policies and strategies showed promising results in the model schools but there are still improvements needed in some areas. Despite the existence of some programs such as the provision of affordable school meals to school children and teachers in one of the schools, such programs could only be implemented to some extent due to the limitations of budget, human resources, time, and knowledge and skills. The schools mentioned high commitment and time investment as two major concerns in a successful implementation of school health policies and strategies. Especially during the pandemic, it was reported that the schools found it more challenging to cope with the situation.

In general, the internal and external support the schools receive from the government and other relevant stakeholders are considered as the key factors for the successful operation of a healthy school canteen. Without the school commitment and/ or effective cooperation of the internal and external stakeholders, a healthy school canteen would not be able to last long.

B. Recommendations

In consideration of the situation of schools in Myanmar, there are some recommendations for healthy school canteens to survive in the long run as follows:

1. Policy makers should set realistic goals and policies for all the schools in Myanmar to implement healthy school canteen practices. These goals and policies must be clearly written and disseminated properly to all schools in ways that are effective such as seminars, training and easy to understand handbooks and audio-visual materials. The schools should also receive updating on these goals and policies should changes be instituted.
2. Monitoring and evaluation of schools to comply with the school health policies should be done regularly by concerned government institutions to find out problems and provide the necessary solutions to school canteen operations.
3. Necessary support should be provided by the government as well as non-government organizations to enable schools to operate healthy school canteens successfully. Such support could be in terms of conducting nationwide health education programmes to enhance public awareness about the importance of health and nutrition. The schools should also be able to avail themselves of advice from government experts on food and nutrition to ensure food safety and quality in school canteens.
4. There is a need for schools in Myanmar to learn about other countries' school health policies and practices, and to adapt them to our situation.

VII

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The Philippines

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Geographic and Sociodemographic Information

The Philippines is an archipelagic country situated in Southeast Asia in the Western Pacific Ocean. It is composed of more than 7,100 islands and spanning 300,000 square kilometers. The country is divided into three major geographic islands, namely: Luzon, Visayas, and Mindanao. In terms of administrative categories, there are 17 regions, 81 provinces, 146 cities, 1,488 municipalities, and 42,046 barangays, the smallest political unit. The governance of the country is through the executive, legislative, and judicial branches. In addition, local government units (LGUs) can enact legislation, deliver services, and impose taxes.

The Philippines is one of Asia's best-performing economies, with its gross domestic product growing at an average of 6.1 percent (Philippine Development Plan [PDP] 2017-2022). Poverty incidence had been reduced from 26.3 percent in 2009 to 21.6 percent in 2015. The Gini coefficient is 0.22, which suggests that wealth is somewhat evenly distributed across the population. However, wealth is distributed more evenly in the urban population (0.15) than in the rural population (0.24). The United Nations human development index ranks the country at 0.712, putting it in the category of high human development (UNDP, 2019).

In 2020, the total population was approximately 109.2 million, with an annual population growth rate of 1.52 percent, which was lower than previously reported in the 2015 census at 1.84 percent (Philippine Statistics Authority, 2020). The population is expected to grow with a fertility rate of 2.7 continuously. The country has a young population, with children under age 15 accounting for 33 percent of the population, while individuals aged 65 and older make up a much lower percentage of 6 percent (PSA and ICF, 2018). The median age was 24.1 years, with 23.6 years among males and 24.6 among females. The average life expectancy is 71 years. Females also have a higher life expectancy at 73.8 years than males at 66.5 years. The population density is 358.7 persons per square kilometer in 2018 (Mbuya et al., 2021).

The Philippines has performed well in terms of educational indicators. The literacy rate was at 93.8 percent, with a school life expectancy of 13 years (PSA, 2020). In 2018, the net enrollment rate in public and private elementary schools was 94.05 percent, 81.41 percent in junior high schools, and 51.24 percent in senior high school. The estimated survival rate in elementary (93.67%) was higher than in secondary (89.47%) schools and was also higher among females than males (Philippine Statistics Authority, 2020). In addition, 94 percent of girls 6-11 years old attend primary school compared with 93 percent of boys. On the other hand, the net attendance ratio (NAR) drops in secondary school at 83 percent among girls and 74 percent among boys aged 12-17 years (PSA and ICF, 2018). In addition, the gross attendance ratio (GAR) for primary school is 104 for girls and 107 for boys; the GAR for secondary school is 92 for girls and 85 for boys.

II

Overview of Educational System

In the Philippines, three government organizations handle education, namely: the Department of Education (DepEd) for primary and secondary education; the Commission on Higher Education (CHED) for tertiary and post-graduate education; and the Technical Education and Skills Development Authority (TESDA) for vocational courses. The education sector is centralized and organized by central, regional, and divisional policy layers, with the health and nutrition services framed as part of the learner support services (Reeve et al., 2018). The DepEd is the executive department of the Philippine government responsible for ensuring access to, promoting equity in, and improving the quality of basic education.

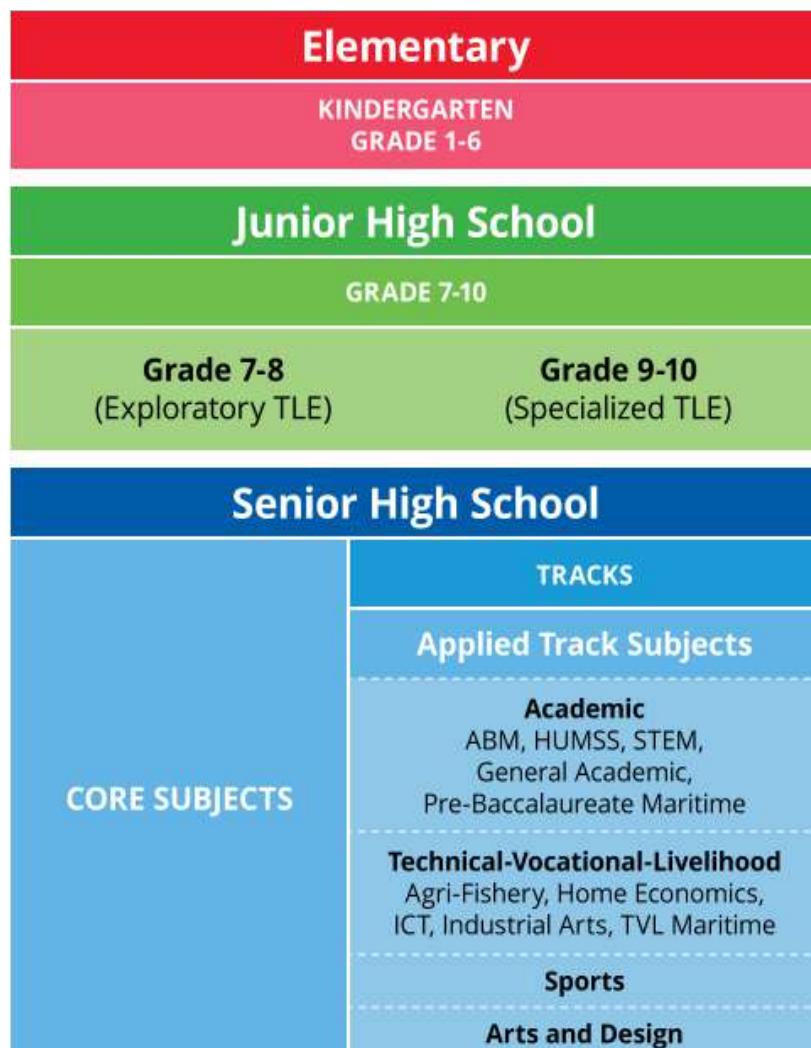


Figure 1. K to 12 Basic Education Curriculum.

(Department of Education Philippines:

<https://www.deped.gov.ph/k-to-12/about/k-to-12-basic-education-curriculum/>)

According to DepEd (n.d), there are 62,605 schools in the country, broken down as follows: 49,209 elementary schools (38,648 public and 10,561 private) and 13,396 secondary schools (7,976 public and 5,420 private). Basic education aims to provide the school-aged population and young adults with skills, knowledge, and values to become caring, self-reliant, productive, and patriotic citizens. Formal basic education is provided mostly by public schools which constituted 83 percent of all basic education institutions in 2017 (Philippine Qualifications Framework website). Before 2012, the educational system consisted of six years of elementary school (primary school) and four years of high school (secondary school). In the current K-12 system, grades 1-6 correspond to primary school, and grades 7-12 correspond to secondary school. However, secondary school is subdivided into junior high school (grades 7-10) and senior high school (grades 11-12). Thus, the K-12 system includes two more years of high school relative to the old system. Students choose among different learning strands (e.g., for the academic track: Accountancy, Business and Management (ABM), Humanities and Social Sciences (HUMSS), and Science, Technology, Engineering and Mathematics (STEM), Pre-Baccalaureate Maritime, and General Academic). Alternative learning system (ALS) is also in place with six different learning strands (communication skills; scientific literacy and critical thinking skills; mathematical and problem-solving skills; life and career skills; understanding the self and society; and digital literacy) (DepEd, n.d.). After K to 12, the students are expected to exhibit college and livelihood readiness. The first class to graduate from the K-12 system was the 2018 class. The students may enter tertiary education and post-graduate programs in their preference.

Overview of Malnutrition, Food, and Healthy Diet Practices among School-Aged Children and Adolescents

Malnutrition affects children and adolescents. According to the 2019 National Nutrition Survey (NNS), the prevalence of stunting in children 5-10 years old was 25.2 percent, while the prevalence of underweight was 26.0 percent and wasting was 8.0 percent (DOST-FNRI, 2019). In addition, the prevalence of overweight/obese was 9.1 percent. The prevalence of underweight and stunting among school children was highest among the 9-10 years old (27.5%, 25.5%), among boys (28.1%, 26.5%), those living in rural areas (27.5%, 26.6%), and those who belong to households in lowest wealth quintile (38.2%, 39.7%).

Among adolescents (10-19 years old), 26.3 percent are stunted, 11.3 percent are wasted, and 11.6 percent are overweight and obese. Stunting has decreased significantly from 31.9 percent to 26.3 percent. Adolescent obesity among Filipinos has almost tripled in the last 15 years (FNRI-DOST, 2018). Many adolescents are insufficiently physically active defined as doing less than 60 minutes of moderate- to vigorous-intensity physical activity per day.

Micronutrient deficiencies were also prevalent among school children. In 2018, the proportion of school children 6-12 years old with urinary iodine levels of <50 ug/L was 12.4 percent (FNRI-DOST, 2021). While this is considered no longer a public health problem, pockets of iodine deficiency disorder still exist among 10-12 years old. Regarding anemia, the prevalence among children aged 6-10 years old was 10.7 percent, more evident among boys, those living in the rural areas, and belong to households with the poorest quintile. Similarly, among adolescents (13-19 years old), the prevalence of anemia was 8.1 percent, with females having a higher rate at 11.1 percent than males at 5.2 percent (FNRI-DOST, 2018). Anemia remains to be a problem of mild public health significance.

School children and adolescents are practicing unhealthy eating habits. They are consuming foods with more fat, sweetened beverages, junk foods, fast-foods, chicken and pork (Agdeppa et al., 2019; Vallejo, 2018). Softdrinks (cola) is the most popular and commonly consumed sweetened beverage (Golloso-Gubat et al., 2015). In addition, beverages contributed only three percent to mean energy intake per day of school children and adolescents but it is associated with higher body mass index. This is consistent with the study of Agdeppa et al. (2019) where soft drinks (any) consumption was significantly higher in those of rich (8%) and middle (7%) socio-economic status (SES) than in those of poor SES (4%).

School children and adolescents are not eating enough vegetables. In the study of Gonzales et al., (2016), the adolescents' mean intake of vegetables was 1.5 servings per day which is below the recommended amount. The mean number of servings per day of vegetable was 1.9 and 1.0 for males and females, respectively. However, fruit consumption was found to be higher than that of vegetables. The adolescents' mean intake of fruits was 4.2 servings per day. Female adolescents consumed more fruits than their

male counterparts. Younger adolescents (12-16 years), specifically the females consumed more servings of fruits compared to older adolescents (17-20 years). Female eat fruits and vegetables as they were more conscious of the health benefits of eating fruits, fruits were perceived to make them slim, to have a beautiful hair, skin and body. On the other hand, male adolescents consumed more vegetables because it was perceived to make them strong and healthy.

Some school children and adolescents also skip breakfast. More girls skip their meals than boys do and, at the same time, more girls are eating beyond the regular mealtime (Catequista and Uy, 2014). Among adolescents who ate breakfast and vegetables have reduced risk or have protective effect in being overweight and obese for both genders with an OR of 0.59 (95% CI: 0.39, 0.89) and 0.32 (95% CI: 0.21, 0.50), respectively. On the other hand, taking frequent snacks is a risk factor in being overweight and obese (Pineda et al., 2020).

Filipino children are consuming a relatively monotonous diet that lacks variety, and usually nutrient inadequate (Mak et al., 2019). The diet diversity was generally low (mean dietary diversity score [DDS] = 4 out of 9). Children from the lowest socio-economic status and living in rural areas tended to have a lower DDS. Children with a DDS of 1 were likely to be inadequate in 11 micronutrients. The higher DDS (>6) was associated with higher probability of adequacies (PAs) for the B vitamins but not for calcium, folate, iron, vitamin A and to large extent, vitamin C.

In addition to the foods available in the school canteens, highly-processed foods (e.g., extruded snacks) are available and cheap compared with healthy locally prepared alternatives (e.g., steamed corn cob, fruit or local peanuts) (Reeve et al., 2019). These foods are available to school children and adolescents through the stores/food stalls around the schools. There is also a high density of stalls selling unhealthy foods around the school perimeter which is a major challenge to ensuring children consume healthy food during school hours. Moreover, school workers and policy makers both noted the influence of ‘sari-sari’ stores (small convenience stores) on children’s exposure and consumption of unhealthy foods.

Lastly, there is more recognition that school children are exposed to harmful food marketing. The study of Tatlow-Golden and Boyland (2021) showed that the social media is almost 100 percent saturated with marketing for unhealthy foods and non-alcoholic beverages. Unhealthy ‘advertised diet’ is promoted to children and families, creating emotional associations of fun, love, sharing and health with these foods, and draws on the ‘star’ power of local sporting and media celebrities. According to the authors, social media marketing in the Philippines communicates that unhealthy foods are fun, tasty, enjoyable, healthy and nutritious, promote family love, make celebrations special, and support physical activity.

IV

Overview of Policy Framework on School Health and Healthy School Canteens

A. Policies on School Health

The overarching national policy on school health and nutrition is Article XV of the 1987 Constitution which mandates the “right of children to assistance, including proper care and nutrition, and special protection from all forms of neglect, abuse, cruelty, exploitation and other conditions prejudicial to their development.” This is translated to numerous programs and policies safeguarding and promoting proper health and nutrition among children, including in schools.

The DepEd has issued various department orders or memoranda related to a healthy and safe school environment, health education, physical education, nutrition services, health services, counseling, psychological and social services, family and community involvement. For example, under the Nutrition Services are programs on school canteens, food safety, and school-based feeding. In terms of organization and structure, the Health and Nutrition Center (HNC) was established as embodied in Executive Order No. 117, series of 1987. HNC is now known as the School Health Division-Bureau of Learner Support Services (SHD-BLSS). The SHD-BLSS is responsible for delivering health and nutrition education and services to students and ensuring they attend clean, healthy, and drug-free schools.

At present, the Philippine policy environment for school health includes programs and policies aimed at improving the health, and nutritional status of school children include construction of health and sanitation facilities; implementation of essential healthcare programs such as deworming, oral health education, supplementary feeding, among others; WASH in schools; availability of healthy food and beverages in school canteens; and health behavior change. A summary of these policies is shown in Table 1.

Table 1. Summary of policies and strategies on school health in the Philippines.

No.	Policy no.	Title	Purpose	Provisions/Mandates
1	P.D. 856 Chapter VI	Implementing Rules and Regulations of Chapter VI “School Sanitation and Health Services” of the Code on Sanitation of the Philippines (P.D. 856)	To carry out the provisions of Chapter VI of P.D. 856	Guidelines on the sanitary permit; site, structural, sanitary facilities, and safety requirements; specific requirements for other school facilities and day care, preschool, children’s institutions, and special schools; special requirements for personnel, students, and school health services; inspection and evaluation; responsibility of stakeholders; and penal provisions.
2	DepEd Order No. 56 series of 2009	Immediate Construction of Water and Hand Washing Facilities in All Schools for the Prevention of Influenza A (H1N1)	To prevent the spread of AH1N1 and other infectious diseases in schools	<ol style="list-style-type: none"> Assessment of the availability of water resources at the school level. The Division shall ensure the availability of running water and soap in all schools. If running water is not available, clean water storage in a clean container/drum may suffice. Construction for common handwashing facilities in schools.
3	DepEd Order No. 65 series of 2009	Implementation of Essential Health Care Program (EHCP) for the School Children	To address the poor health status of public school pupils	Institutionalizing evidence-based, cost-effective interventions, such as daily handwashing with soap, toothbrushing with fluoride toothpaste, and bi-annual deworming as a school activity.

No.	Policy no.	Title	Purpose	Provisions/Mandates
4	DepEd Order No. 13 series of 2017	Policy and Guidelines on Healthy Food and Beverage Choices in Schools and DepEd Offices	<ol style="list-style-type: none"> 1. Make available healthier food and beverage choices among the learners and DepEd personnel and stakeholders; 2. Introduce a system of categorizing locally available foods and drinks in accordance with the geographical, cultural, and religious orientations; 3. Provide guidance in evaluating and categorizing foods and drinks; and 4. Provide guidance in the selling and marketing foods and beverages in schools and DepEd offices, including purchasing foods for school feeding. 	The policy applies to all public elementary and secondary schools and learning centers, including departments in central, regional, and division levels.
5	DepEd Order No. 10 series of 2016	Policy and Guidelines for the Comprehensive Water, Sanitation and Hygiene in Schools (WinS) Program	To promote correct hygiene and sanitation practices among school children and a clean environment in and around schools to keep learners safe and healthy	Basic requirements and standards for elements of WinS (water, sanitation, hygiene, health education, deworming), roles and responsibilities of stakeholders, partnerships and linkages, funding, and monitoring and evaluation.

No.	Policy no.	Title	Purpose	Provisions/Mandates
6	DepEd Order No. 39 series of 2017	Operational Guidelines on the Implementation of School-based Feeding Program for School Years 2017-2022	To address undernutrition among public school children	The SBFP covers all Severely Wasted (SW) and Wasted (W) Kindergarten to Grade 6 pupils for SY 2017-2018. The program primarily aims to improve the nutritional status of the beneficiaries by at least 70% at the end of 120 feeding days. Secondarily, it seeks to increase classroom attendance by 85% to 100% and improve the children's health and nutrition values and behavior.
7	DepEd Order No. 028 series of 2018	Policy and Guidelines on Oplan Kalusugan (OK) sa DepEd	To promote and provide all learners (Kindergarten to Grade 12) and DepEd (teaching and non-teaching) personnel in all public elementary and secondary schools and DepEd offices with a sustainable holistic school health and nutrition program towards healthier behaviors and better learning outcomes	Establishes the guidelines in the planning and implementation of OK sa DepEd. Implementation strategies include management and institutional arrangements, planning and targeting, coordination with partners, the orientation of personnel, conduct of One Health Week, continuation of health and nutrition services and activities, funding, reporting and recording, and monitoring and evaluation. The Order also enumerates the roles and responsibilities of every stakeholder and its prohibitions.

No.	Policy no.	Title	Purpose	Provisions/Mandates
8	DepEd Order No. 030 series of 2018	Preventive Drug Education Program (PDEP) Policy for Curriculum and Instruction	To strengthen the implementation of PDEP in schools and CLCs	Integration of drug abuse prevention and control in elementary, secondary, and tertiary curricula of all public and private schools
9	DepEd Order No. 014 series of 2020	Guidelines on the Required Health Standards in Basic Education Offices and Schools	To ensure the safe return to schools and DepEd offices once allowed by the DOH and IATF or Office of the President	Adoption of guidelines on required health standards and implement the specific interventions for COVID-19 mitigation
10	DepEd Order No. 023 series of 2020	Operational Guidelines on the Implementation of SBFP for SY 2020-2021	Continue SBFP to address hunger and encourage learners to enroll, improve nutritional status, provide nourishment for growth and development, boost the immune system and enhance and improve health and nutrition values	Modified due to pandemic; states that the program shall provide beneficiaries nutritious food products through rationing for at least 60 feeding days and fresh or sterilized milk for 50 feeding days

B. School Canteen Roles and Significance

The DepEd Order No. 8 Series of 2007 states that “school canteens shall serve as a venue for developing desirable eating habits of pupils/ students”. Specifically, the school canteens in the public school system are mandated as follows:

- The school canteen shall help eliminate malnutrition among pupils/students.
- The school canteen shall serve as a venue for the development of desirable eating habits of pupils/students.
- The school canteen shall serve as a laboratory for Home Economics, retail trade, and in the incidental teaching of health and nutrition. It shall provide hands-on training for students on planning, purchasing, handling and storage, preparation, serving, and sale of safe and nutritious meals.
- The school canteen guidelines shall serve as a mechanism to support the Department’s response to the mandate of Article 2 of Republic Act No. 6938 to create an atmosphere that is conducive to the growth and development of cooperatives.

- e. Service should be the main consideration for operating a school canteen. Profit shall only be secondary since the clientele are pupils/students who are dependent only on their meager allowance from their parents.
- f. Reporting and accounting of the proceeds from the operation of a school canteen shall be made by the parties concerned to emphasize transparency and accountability.

C. Current Status of School Canteens

The operation of school canteens is under the governance of the DepEd. Most primary and secondary schools have a canteen or store and offer a school feeding program to primary school children at risk of malnutrition. School canteens can either be School-Managed Canteen or Teachers' Cooperative-Managed Canteen. Elementary schools in the rural areas with 500 pupils or less and those in urban areas with 1,000 pupils or less shall have only one canteen to be operated and managed by the school under the general supervision of the school head/principal. In secondary schools, regardless of enrolment size, there shall be a laboratory canteen. When the student population is less than one thousand five hundred (1,500), the laboratory canteen shall also be the school-managed canteen. Local government units also play their role in promoting healthy school canteen. For example, the Quezon City government issued Ordinance No. SP-2594 series of 2017 to institutionalize and appropriate funds for the city's most healthy public school canteens award in line with the DepEd Order No. 8 series of 2007.

Public school canteens offered one main dish, one cup of rice, one serving of snacks (Donato et al., 1980), and fruits, vegetables, and fish were sold in few establishments (Encabo and Ventanilla, 2014). Moreover, the portion sizes were observed to be too small. The food provided 28 percent and 30 percent of the daily dietary protein allowances of male and female school children, respectively (Donato et al., 1980). Only calcium intake met the daily requirement (Encabo and Ventanilla, 2014).

Most students perceived that their public school canteen promoted and offered nutritious, freshly prepared, and affordable food items in appropriate portions and that the canteen's staff were committed to following their food safety and hygiene plan, which was shown by sanitized utensils, equipment, and facilities, and good quality of food (Minguitol and Capunan, 2019). Students were satisfied with the canteen personnel's attitude, service, and food handling and sanitation (Galabo, 2019). However, students were not satisfied with the affordability of the food items and the canteen's ambiance. In private school canteens, students were exposed to a considerable amount of unhealthy food and beverages (those with high amounts of sugar, sodium, and trans-fat), and more than 75 percent of grade school and high school students consumed "unhealthy" food and drinks (Cartagena, 2014).

Public school canteens and stores are often run by canteen workers, parents or volunteers, and teachers' cooperatives. However, there is a need to continue their capacity building as not all have attended food safety-related training. For example, some food handlers were knowledgeable on food safety and hygiene, but these were not translated into practice as evidenced by inappropriate thawing methods and refreezing meats. In addition, most of them were unaware that microorganisms could be found in the nose, mouth, and

skin. Furthermore, even though the majority were aware that eating and drinking during work hours contribute to the risk of food contamination, eating and drinking in the workplace were still reported (Pascual et al., 2019).

Amid the pandemic, the BLSS-SHD and other agencies continued to work on enhancing school canteen operations. For example, workshops on proper nutrition and diet among school canteen chefs and managers was conducted by the DOH Region IV-A, which aimed to improve further knowledge on appropriate meal planning, including for patients affected by lifestyle-related diseases such as DM, cancer, and kidney and cardiovascular diseases (Pino, 2019). Other trainings were on Basic Food Safety in 2017, HACCP in 2018 and Food Safety Compliance.

The Technical Education and Skills Development Authority (TESDA) also developed different vegetable-based snack recipes, including vegetable burgers made of squash bun and vegetable patty, squash tart, and sweet potato hash brown. These products were acceptable to elementary students and were found to contain 255-333 kcal per serving, with costs ranging from Php 6 to 11 (Fider et al., 2016).

Some innovations have been implemented in school canteens. For example, in Negros Occidental, a school cafeteria catering to 400 students uses plates made of banana leaves, bowls from coconut shells, and mugs made from bamboo instead of plastic utensils, plates, and cups. In addition, fresh and local foods are offered to students instead of processed foods packaged in single-use plastic (Bulan, 2019). Some local government units such as Bacolod City and Quezon City have also passed local ordinances supporting healthy school canteens (Pedrosa, 2018). For example, in Quezon City, Ordinance No. SP-2594 series of 2017 institutionalized the granting of ‘Most Healthy Public School Canteens Award, which have met the criteria and conditions: 1) compliance to legal and reportorial requirements; 2) proper physical appearance of canteen personnel; 3) proper condition of canteen facility; 4) adherence to food safety; 5) serving of nutritious food; 6) proper waste management; 7) innovations.

In 2005, DepEd mandated all public and private elementary and secondary schools to establish their canteens and encourage students to consume school canteen-prepared food items (DepEd Order No. 14 series of 2005). School canteen refers to one of the ancillary services in the Philippine school system that sells food items to the students and serves as a support mechanism in the effort to eliminate malnutrition concerns of the school. It can be used as a laboratory canteen for food planning, preparation, serving, storage, and selling. It can either be school-managed or teachers’ cooperative-managed. This policy included integrating basic food safety messages in the basic education curriculum. In addition, it involved local government (LGUs) and rural health units (RHUs) to regulate food and beverages by ambulant vendors. In the same year, DepEd also released guidelines on school canteen operation and management in public elementary and secondary schools through the DepEd Order No. 17 series of 2005. The policy provides specific guidelines on school canteen classification, procedure and transparency requirements, and monitoring and enforcement, including adherence to food safety and grievances mechanisms.

A revised policy was published in 2007 (DepEd Order No. 8). This order contained the guidelines in the organization and management of school canteens to ensure that they

help eliminate malnutrition among students and serve as a venue for the development of desirable eating habits of students. It also contained additional details on reporting and guidelines on food quality; however, it does not include some food groups recommended by the Philippines food-based dietary guidelines. In addition, a compliance order was released the following year (DepEd Order No. 52, series of 2008), instructing regional directors and schools division superintendents to oversee the school canteen management and ensure accountability towards any non-compliance or food safety incidents.

The DepEd also provided a set of guidelines and criteria on food standards in schools, learning centers, and its offices (DepEd Order No. 13, series of 2017), mandating schools to make available healthier food and beverage choices to students, teachers, and other stakeholders; to introduce a system of categorizing locally available foods and drinks, and to provide guidance in the selling and marketing of foods and beverages in schools and DepEd offices including the purchase of foods for school feeding. The following are the food standards to be followed by school canteens:

- a. Adhere to a healthy diet defined as balance in food intake which: (a) achieves energy balance and a healthy weight; (b) limits energy intake from total fats and shifts fat consumption away from saturated fats to unsaturated fats and towards the elimination of trans-fatty acid; (c) increases consumption of fruits and vegetables, legumes, whole grains, and nuts; (d) limits the intake of free sugars, and limits salt (sodium) consumption from all sources.
- b. Not to sell foods and beverages high in fat and/or sugar and/or sodium.
- c. Use *Pinggang Pinoy*, a plate-based food guide, to inform students on building a healthy and balanced meal.
- d. Promoting the reading of nutrition facts/labels.
- e. Evaluate and categorize packaged foods with Nutrition Facts and non-packaged foods with no Nutrition Facts, canteen-cooked foods, and common snack foods sold in the canteens as follows:
 - i. Green foods that should always be available in the canteen, including nutrient-rich food items with generally low amounts of sodium and sugar and no trans-fat;
 - ii. Yellow foods that should be served in smaller servings and only once or twice a week since these foods contain some nutrients but also significant amounts of saturated fat, sodium, and sugar, and;
 - iii. Red foods are not recommended in the canteens, such as those containing high amounts of sodium, sugar, or saturated and trans-fat.
- f. Follow the guidance in preparing canteen-cooked foods to lower saturated or trans-fat, sugar, and sodium, such as using cooking methods that require less or no fat/oil (e.g., boiling, steaming); reducing the added salt or salt.
- g. Increase availability and accessibility of healthy and safe foods and water. The sale of carbonated drinks, sugar-based synthetic or artificially flavored juices, junk foods, and any food product that may be detrimental to the child's health and that does not bear the *Sangkap Pinoy* seal and/or did not pass BFAD approval is prohibited.

- h. No form of marketing, i.e., advertising, sponsorship, and promotion in schools and DepEd offices.

In summary, the policies related to school healthy canteen are shown in Table 2.

Table 2. Summary of policies on school canteens and school-based feeding in the Philippines.

No.	Policy no.	Title	Purpose	Provisions/Mandates
1	DepEd Order No. 17 series of 2005	Revised Implementing Guidelines on the Operation and Management of School Canteens in Public Elementary and Secondary Schools	<ul style="list-style-type: none"> 1. Serve as a support mechanism in the effort of the school to eliminate malnutrition; 2. Serve as a venue for the development of desirable food eating habits of the learners; 3. Shall continue to operate as a laboratory for home economics; 4. Service should be the main consideration for operating while profit shall only be secondary 5. Proper reporting and accounting of proceeds shall be made by the parties concerned for transparency and accountability 	<ul style="list-style-type: none"> - Classification of school canteens based on enrolment size, procedural guidelines, transparency requirements, practicum activities, specific guidelines on the designation of a canteen teacher, accounting of funds, the share of proceeds, as well as criteria for classification and documents required for teacher's cooperative-managed canteen - Canteen operations and mark-up price, monitoring and enforcement including adherence to food safety and grievance mechanism

No.	Policy no.	Title	Purpose	Provisions/Mandates
2	DepEd Order No. 14 series of 2005	Instructions to ensure consumption of nutritious and safe food in schools	To ensure consumption of nutritious and safe food in schools	<ol style="list-style-type: none"> 1. Canteen for every school 2. School canteen-prepared foods 3. Regulation/control of supply of food items 4. Home prepared snacks 5. Involvement of LGUs/RHUs in regulating the sale of food and beverages by ambulant vendors 6. Food safety messages/concepts
3	DepEd Order No. 8 series of 2007	Revised Implementing Guidelines on the Operation and Management of School Canteens in Public Elementary and Secondary Schools	Same with DepEd Order No. 17 series of 2005 with the addition of ‘shall serve as a mechanism to support the DepEd’s response to the mandate of Article 2 of RA 6938 to create an atmosphere that is conducive to growth and development of cooperatives.’	Same with DepEd Order No. 17 series of 2005 but with details on reports, guidelines on food type/quality

No.	Policy no.	Title	Purpose	Provisions/Mandates
4	DepEd Order No. 52, S. 2008	Compliance with DepEd Policies on Food Safety	To comply with DO 8, s 2007	<p>Regional directors and schools division superintendents are instructed to oversee the effective management of the school canteens, whether these be school-managed or teachers' cooperative-managed; and to underscore the accountability of the school principal for any untoward incident that may happen in the school due to non-compliance with school health policies and food safety guidelines.</p> <p>A monitoring team shall be tasked to ensure adherence to quality, handling, and serving of food in the school canteen and that food safety standards and hygienic practices are strictly observed and implemented</p>

D. Policy Implementation Challenges

Some challenges related to school canteen operations and management include lack of financial and human resources from planning to implementation and monitoring; several ambiguous words in the policies leading to misinterpretation of food items eligible for selling in school canteens (Reeve et al., 2018); the continued presence of junk foods in the school premises; lack of access to school canteens making students opt to consume unhealthy foods, and lack of time and money of students (Teves et al., 2016). Another challenge, especially in public schools, is the lack of space and poor layout design. For example, the kitchen area has usually confined space and forces workers to stand for a long time in almost static motions, causing pain and discomfort (Gumasing and Espejo, 2020). In public secondary schools, limited menu offerings and lunch meals in the canteen resulted in adolescents' limited intake of essential nutrients (Encabo and Ventanilla, 2014).

V

Best Practices of Healthy School Canteen

A. Selection of Schools with Healthy School Canteens and Data Collection

To find a wide variety of best practices on healthy school canteens, different types of schools (i.e., with small and large student populations, and catering to primary, secondary and/or tertiary levels) were considered for interview. Among these were public schools known for their work in school-based nutrition programs and adherence to DepEd school canteen policies, as gathered from a school and home gardens project with the DepEd Region 4A Division of Laguna. One of these was an elementary school that placed third in the 2017 SEAMEO-Japan Education and Sustainable Development award. The award recognizes the efforts of schools in the SEAMEO region to implement programs “to improve health and nutrition of students that also transform schools into a healthy learning environment.”

Other public schools considered were those that catered to indigenous people. The local government unit (LGU), which works closely with the DepEd office in the area, recommended their inclusion in the project based on what it considers as unique best practices of the schools. Likewise included in the list of schools was a state university high school.

Private schools, both Catholic and non-sectarian, were likewise added to the list of schools. One was known to not only offer up to the tertiary level of education but also technical education and was an accredited competency assessment center which offered food-related training programs.

The schools which participated in the project met the preceding criteria. On the other hand, evaluation criteria for selection of a best practice included: adherence to DepEd school canteen policies, contextual relevance, stakeholder (students, faculty, and staff) inclusion/collaboration, community engagement, effectiveness and efficiency, replicability or scalability, and sustainability.

Initial exploratory talks, exchange of emails, and subsequent communication through other platforms were conducted to explain the project and validate the presence of a school canteen. The interview guide was forwarded to the schools and respondents were the school president and faculty/ teachers who oversaw the canteen management. Two of the school principals were part of the email exchanges. In two cases, representatives from the LGU, DepEd, and the schools were in the Facebook Messenger group chat created by the LGU. This was their special request as this was the easiest way for them to communicate.

B. Best Practices, Major Challenges, and Future Plans of Selected Schools with Healthy School Canteens

1. The Calawit Elementary School

The Calawit Elementary School is a public school in Calauit, Buluang in the Municipality of Busuanga, Province of Palawan. It was established in 2006 in response to the growing number of school-aged children in the area. The school caters to students from the indigenous community and currently has a population of 197 students and seven teachers.

Though the school does not have a written vision regarding the health of its students, it has articulated its commitment to the provision of a healthy school environment and serving quality meals in partnership with families and the community. The school considers school health programs as efficient vehicles towards the prevention of major health and social problems in the surrounding communities.

Brief Description of The School Canteen

A nipa hut measuring 2.5 x 3 meters served as a temporary school canteen since 2018. There was no functional school canteen prior to this period. A school teacher is designated by the school head to look after the canteen. If the designated teacher transfers to another district or school, the school head designates another teacher.

All the teachers are familiar and comply with relevant legal requirements regarding food safety and occupational health and safety standards. They are educated on the Food Safety Act of 2013 and the Occupational Safety and Health Law. The Food Safety Act specifically aims to protect the public from food-borne and water-borne illnesses and unsanitary, unwholesome, misbranded, adulterated food. Acts contrary to the provisions of the law will be penalized through fines, suspension or permanent revocation of the authority to run the canteen, or imprisonment. The Occupational Safety and Health Law mandates safe and healthy working conditions. The canteen is also used as a venue to reinforce the lessons in nutrition taught in class, promote healthy food as well as the enjoyment of eating together.

Major Challenges

One of the major challenges faced by the school is its lack of resources to improve school facilities, particularly its canteen, which is considered makeshift and is small for the number of students. Though using locally available food or ingredients has minimized cost to students and staff in terms of buying food, the canteen is very much in need of an upgrade. The school also does not have clear canteen practices, including management guidelines and meal planning. This is one thing which needs immediate attention.

Best Practices of the School Canteen

a) Serving of culturally relevant and locally available food

The school canteen serves culturally relevant and locally available foods to students and other members of the school community. Examples of food sold in the canteen are *bibingka* made from wild yarn called *kurot*, *linupak* made from banana, and *suman* made from glutinous rice. The wild yarn are gathered from the mountains, if not properly prepared, can be toxic.

Linupak, or *nilupak* in other areas, is a delicious Filipino treat usually made from cassava. This is enjoyed in the Philippines as a snack. In Calauit, the popular *linupak* is made from *saba* banana, which contains a rich blend of nutrients and vitamins, dietary fiber, and iron. They provide no fat or cholesterol. The *Suman* is cooked in coconut milk, often wrapped in banana leaves. It is mostly carbohydrate, with no fat provided.

The selling of these local foods ensures healthier meals and helps minimize the consumption of high-salt and high-sugar processed food among the students. It is also in

accordance with the directive of the DepEd on not serving soft drinks and high-sodium food. This practice goes beyond nutrition as it also helps promote better understanding of the traditions and customs of the indigenous community. The cultural relevance and local availability of these canteen foods, especially as part of the community's indigenous knowledge systems and practices, also contribute to the productivity and sustainability of the local ecosystem. Moreover, because the food is locally available, costs are kept to a minimum.

This best practice works well for the school because of the nature of the student population and the community it is in. This can be pursued by other schools as well, not necessarily in terms of cultural relevance, but more on featuring local healthy delicacies. This can be an avenue for improved knowledge of local cuisine, especially among the youth whose exposure may be more on those junk foods aggressively marketed by food and advertising companies.

b) Engagement of families and the community in the school canteen

Family members or vendors from the community prepare food for the canteen; some are provided for free while others are sold at low prices. There is no specific set of criteria for who can sell food in the canteen as long as the vendors are able to present to the school a sanitary permit from the local government and prepare foods in accordance with legal and health requirements on food safety and on running a healthy canteen. The small number of students, the size of the community, and the close-knit nature of the indigenous group greatly facilitate this engagement.

The school recognizes the importance of engaging parents in school activities. DepEd Orders that relate to ensuring hygienic and healthy environments are discussed in Parents-Teachers Association (PTA) meeting to be applied in the school canteen as well as in households of students. Engagement of the parents makes them understand better the programs of the school including the canteen, avoid potential conflicts, and encourage a more committed participation from all stakeholders.

Plans to Sustain School Canteen Operations and Its Best Practices

The school plans to make its canteen a bigger and more permanent structure. Thus, the school is harnessing the support of the local government for funds. It also looks forward to the continuing involvement of the families and the community, particularly through their in-kind contribution and manpower in improving the school facilities. The school also looks to the possibility of partnering with nongovernmental and community organizations and other stakeholders for their support.

The school also plans to develop stronger policies on its school canteen, including updating and expanding the snacks menu. The school will likewise continue its efforts to involve parents in healthy diets and healthy school canteen through continuing discussions with them, through PTA meetings, on DepEd orders and explain why these orders are in place.

2. University of the Philippines Rural High School

Established in 1929 under the University of the Philippines College of Agriculture, the University of the Philippines Rural High School (UPRHS) began as a practice school for the training of teachers, provided secondary education in agriculture, and trained intermediate school graduates in agriculture. It has evolved and is now a full state university high school with a science-oriented curriculum aligned with that of UP Los Baños. It currently has 720 students supported by 59 faculty members and a complement of 14 staff members.

The school does not have a written statement on its vision for the health of its students. However, it has clearly articulated in its school policies that it does not allow soft drinks and unhealthy (high sodium) chips to be served at the school canteen and during school fairs. Furthermore, towards health-oriented character-building of students, the school teaches a subject called Basic Food and Nutrition, which includes nutrition guidelines and healthy eating practices, as part of the mandated curriculum for Grade 9 students. Activities related to food and nutrition are included during the HE-Aggie Fair (annual school fair related to Life Skills) like cooking demonstrations and related seminars.

Brief Description of the School Canteen and Its Major Challenges

a) Physical Description of the Canteen

The UPRHS canteen is a solid cement structure, about 192 square meters, with a seating capacity for about 50 people. It is a non-profit food service provider for the UPRHS students, faculty, and staff. It is concerned with covering costs rather than profits and aims to be self-liquidating. The routine budget, staff wages, and other incidental expenses come solely from the sales. The remaining amount from the sales after all deductions becomes a revolving fund. The school pays for the electricity and water.

b) Basic Management of the Canteen

The canteen operates on the principle of quality service. Aside from its main function of providing food for its constituents, the canteen serves as the laboratory of Home Economics (HE) courses under the Life Skills Education Department (LSED). A Canteen Management Committee, composed of the faculty members of the HE Division of the LSED, takes charge of the planning, monitoring, and financial management of the canteen operations. There are five canteen staff that directly manage receiving, preparing, cooking, and selling. The chief cook had undergone basic training on food handling and safety before he was hired and occasionally attends upskilling training. Staff are also oriented on food handling and safety.

c) Meal Service Provided

To maintain the routine hygienic behavior of the food handlers, students and other involved parties, as well as to ensure food quality, a monthly cycle menu is planned by the HE faculty together with the cook. A monthly cycle menu is a series of daily menus, covering breakfast, morning snacks and lunch. The menu each day is different until the end of the cycle, after which the menu is repeated. Cycle menus save time and provide menu planners the opportunity to offer a varied menu selection. Most of the time, the

cycle menu is modified because of what the students want and prefer to eat. There are instances where there are dishes that are available every day of the week, like fried chicken and *lechon kawali*. An example of a cycle menu prepared by the HE faculty is shown in Table 3.

Table 3. Sample cycle menu, UPRHS.

		Breakfast/AM snacks	Lunch		
			Dish 1	Dish 2	Dish 3
Week 1	Monday	Bacon, egg	Fish sariado	Chicken bbq	Sauteed tongue with carrots
	Tuesday	Chicken sopas	Chicken tinola	Pork bbq	Eggplant omelet
	Wednesday	Salted eggs	Pork steak	Fried fish fillet	<i>Kilawing labanos</i>
	Thursday	<i>Champorado</i> (porridge)	<i>Ginataang</i> tilapia	Pork embotido	<i>Patola</i> with misua
	Friday	Hotcake	<i>Lechon kawali</i>	Chicken menudo	<i>Ginisang monggo with malunggay leaves</i>
Week 2	Monday	Beef/Chicken <i>Mami</i> (noodles)	Pork <i>sinigang</i>	Chicken <i>hamonado</i>	Vegetable tempura
	Tuesday	Spaghetti	Chicken liver <i>adobo</i>	Pork <i>nilaga</i>	<i>Ginisang ampalaya</i>
	Wednesday	Fried daing/tuyo (dried fish)	<i>Lumpiang shanghai</i>	Chicken <i>pochero</i>	<i>Adobong kangkong</i>
	Thursday	Hotdog	Pork <i>dinakdakan</i>	Beef <i>nilaga</i>	<i>Kulawo</i>
	Friday	Footlong sausage	<i>Rellenong bangus</i>	Pork <i>igado</i>	<i>Ginataang sitaw at kalabasa</i>

		Breakfast/AM snacks	Lunch		
			Dish 1	Dish 2	Dish 3
Week 3	Monday	Carbonara	Pork <i>adobo</i>	Stir-fry pork with cabbage	<i>Suam na mais</i>
	Tuesday	<i>Kwek-kwek</i>	<i>Paksiw na bangus</i>	Pork <i>menudo</i>	<i>Bistek na talong</i>
	Wednesday	Steamed siomai	<i>Sinigang na hipon</i>	Fried chicken	<i>Pinakbet</i>
	Thursday	Chicken nuggets	Pork asado	<i>Inihaw na tilapia</i>	Chopsuey
	Friday	<i>Bihon guisado</i>	<i>Sinigang na bangus</i>	Chicken <i>adobo</i>	Fried eggplant
Week 4	Monday	Chicken <i>sotanghon</i>	Pork kare-kare	<i>Inihaw na bangus</i>	Vegetable salad
	Tuesday	Macaroni pasta	<i>Adobong pusit</i>	Pork <i>pochero</i>	Ensaladang <i>pako</i> (fern)
	Wednesday	<i>Lumpiang Shanghai</i>	Sweet and sour fish	Pork <i>bbq</i>	Fried vegetable lumpia
	Thursday	<i>Tocino</i> , Egg	Beef with mushroom	Sauteed pork <i>giniling</i>	Crispy kangkong
	Friday	<i>Molo</i> soup	Chicken curry	Sauteed fish	Ginisang <i>pechay</i>

To ensure the functionality and hygiene of the canteen facilities routinely, regular meetings are held by the Canteen Management Committee together with the canteen staff. During food preparations and cooking, a faculty member randomly (on a weekly duration) checks the food preparation area. Regular inventory of equipment is conducted, and replacement is done when needed.

Comments and suggestions are likewise solicited from the faculty and staff during regular faculty meetings and, at random occasions. Students are always encouraged to give their comments or suggestions through their Homeroom class advisers or presidents. Utmost care is exerted to ensure that food sold in the canteen are within safety and nutrition standards. Food labels (nutrition facts and expiry dates) on commercially manufactured snack items, e.g., cookies, bread, drinks and beverages, are checked/read by faculty members in charge (HE Division), particularly when there are new food products that the staff bought for selling. They also follow DepEd rules as to what foods/drinks should not be offered/served at the canteen area, i.e., soft drinks and unhealthy chips have not been sold since the DepED directive.

d) Major Challenges

In terms of facilities and structure, the space for the school canteen's food preparation and cooking and dining areas are quite small considering the number of clienteles. The canteen only has the basic and necessary equipment and facilities to ensure safe and good quality foods. The school has not established partnership/collaboration with other organizations/institutions yet to support the operation of a healthy school canteen.

Best Practices of the School Canteen

a) Posting of the caloric content of the viands sold

The school canteen management computes the caloric content of commonly served dishes, mostly viands, based on the Food Composition Table and Food Exchange List and posted on the glass pane of the food counter. This practice is helpful to clients to make informed and healthful decisions about meals and snacks they would eat. The students become more aware of how much calories they consume and tend to favor healthier food choices. Also, the UPRHS canteen does not sell soft drinks and unhealthy chips. Vegetables are promoted as healthy, which is why it is a regular part of the meal plan.



Figure 2 Calorie labelling posted on the food counter
(Photo Credit: Prof. Ellen Ann A. Diolata).

b) Optimizing the school canteen as a learning venue

The school canteen serves as a practicum area for students to learn and observe basic food preparation and cooking, and other food management principles and procedures. Students are required for several hours in a quarter to serve as staff at the canteen service area, assisting in food preparation, serving food, washing the utensils, and doing inventories, among others.

c) Inclusion of canteen services in the school's yearly strategic program planning

Strategic planning helps set the direction for the school and sharpens focus on how to get there. This practice highlights the commitment and forward-looking attitude of the school management towards ensuring a healthy canteen.

Plans to Sustain School Canteen Operations and Its Best Practices

The school will continue with its current practices in its canteen while also thinking of and crafting initiatives towards improving the diets of its constituents. It will continue to adhere to DepEd policies and guidelines on quality food to serve its faculty, staff, and students. The school canteen will continue to be on the agenda of the school's annual strategic planning activity to ensure that its maintenance requirements are met. This will also help guarantee that initiatives that may be developed and implemented in the future will have the necessary logistical support and the backing of its constituents.

3. San Antonio de Padua College Foundation of Pila, Inc

San Antonio de Padua College Foundation of Pila, Inc. (SAPC) was established in 1979 by a group of successful entrepreneurs and professionals who believed that poverty is not a hindrance to education. It sees its mission as integrated basic, tertiary, and technical education and training that actively engages the family in pursuit of lifelong independent learning, critical and creative thinking and technological fluency. It aims to contribute to nation-building and economic development through relevant researches and pro-active extension services geared towards the improvement of the environment and the quality of life of the community.

The SAPC is a private and non-sectarian school that offers Basic Education (Kindergarten to Grade 12) and Tertiary Education. It also offers Technical Education on a variety of subjects, including Bread and Pastry Production, Cookery, and Food and Beverage Services. For the school year 2020-2021, it has a student population of 850.

The SAPC strictly follows the local government unit's sanitation policy and permits for food handlers. It follows various avenues towards the development of the health-oriented character of the students. In grade school, subjects related to health and nutrition are taught through Music, Arts, Physical Education, and Health (MAPEH) and Edukasyon sa Pagpapakatao (EsP). In Junior and Senior High, these are taught in the subjects under the Technical-Vocational-Livelihood (TVL) Track. In the tertiary level, Bachelor of Science in Hospitality Management (BSHM) is offered where college courses related to food preparation, food and beverage service, and cooking are taught.

Brief Description of the School Canteen and Its Major Challenges

a) Physical Description and Basic Management of the Canteen

School canteen is around 63 sq meters, with indoor and outdoor seating. It can accommodate 50 students at a time. It has a separate production or preparation area of the same size as the canteen. The school canteen is under the supervision of the Head of Administration who serves directly under the School President. The School President, who is a registered dietitian and nutritionist, oversees the management of the school canteen. The school nurse, which handles safety and wellness of the students, faculty, and staff closely monitors the school canteen for sanitary and safety practices and quality assurance. The school canteen has nine full-time staff assigned to different jobs under the guidance of a trained supervisor for cold kitchen and hot kitchen.

The school conducts a regular assessment and evaluation of the school canteen operations every quarter to maintain the routine hygienic behavior of the food handlers, students and other parties involved, as well as to ensure food quality. The school ensures the functionality and the hygiene of the canteen facilities through a regular checklist of housekeeping assignments and maintenance of tools and equipment.

The school follows policies set by the Private Education Assistance Committee Fund for Assistance to Private Education (PEAC-FAPE), one of the accrediting bodies for private schools. PEAC-FAPE looks to the compliance of schools to DepEd standards. The faculty, staff, students, and parents work together in support of the school canteen. Budget to run its school canteen comes from the canteen's daily income and from the budget allotted by SAPC's Board of Trustees.



Figure 3. School canteen (Photo source: SAPC).



Figure 4. Food preparation area and equipments.

b) Meal Service Provide

The school also does not serve soft drinks and high-sodium and sugar foods and constantly monitors its menu and food prices. It also develops a cycle menu, which it posts prominently in the canteen and its premises for students and parents to see. The school also has budget meals, costing around thirty-five pesos (Php35.00) for those who may not be able to afford the more expensive choices on the menu. Examples of the cycle menu and the budget meal are shown in Table 4.

Table 4. Menu plan of SAPC Canteen.

MENU PLAN	Assigned Staff:				
Budget Meals	All Day				
	Monday	Tuesday	Wednesday	Thursday	Friday
Tocino	Tocino	Tocino	Tocino	Tocino	Tocino
Tapa	Tapa	Tapa	Tapa	Tapa	Tapa
Skinless Longaniza	Skinless Longaniza	Skinless Longaniza	Skinless Longaniza	Skinless Longaniza	Skinless Longaniza
Ham	Ham	Ham	Ham	Ham	Ham
Hotdog	Hotdog	Hotdog	Hotdog	Hotdog	Hotdog
Tempura	Tempura	Tempura	Tempura	Tempura	Tempura
Siomai	Siomai	Siomai	Siomai	Siomai	Siomai
Shanghai	Shanghai	Shanghai	Shanghai	Shanghai	Shanghai
Corned Beef	Corned Beef	Corned Beef	Corned Beef	Corned Beef	Corned Beef
Fried Rice	Fried Rice	Fried Rice	Fried Rice	Fried Rice	Fried Rice
Rice	Rice	Rice	Rice	Rice	Rice
Eggs	Omelets	Omelets	Omelets	Omelets	Omelets
	Sunny Side Up	Sunny Side Up	Sunny Side Up	Sunny Side Up	Sunny Side Up
	Pancakes	Waffles	Pancakes	Waffles	Pancakes
	Spaghetti/Red	Baked Mac w/WhiteS	Spaghetti/Red	Baked Mac w/WhiteS	Spaghetti/Red
	Carbonara	Tuna Linguinie	Carbonara	Tuna Linguinie	Carbonara
	Pancit Palabok	Pancit Canton/Bihon	Mike Guisado	Sotangon	Bihon
	Champorado	Sopas	Lomi	Chicken Mami	Arroz Caldo

Menu Plan	Assigned Staff				
	Monday	Tuesday	Wednesday	Thursday	Friday
Hot Soup/					
Employees Meal	Sinigang Chicken	Pochero Ribs/Pata	Tinola	Miso Soup	Mongo Guisado
Veggies	Kare Kare	Lumpia Gulay	Guinatan Gulay	Bicol Express/	Ampalaya w/Egg
Vegetable	Togue Quisado		Stir Fry Togue	Talong Steak	Stir Fry Togue
Fish	Fish Fillet	Fish Sarciado	Fish Steak	Sinigang Na Isda	paksiw isda
Seafood	Pusit Adobo	sinigang hipon	pusit with kinchay	okoy	sinaing tulingan
	Shrimps Quail Eggs w/ Veggies		mix seafood gata		
Pork	Adobo Pork Chop	Adobo Pork Chop	Adobo Pork Chop	Adobo Pork Chop	Adobo Pork Chop
	Pork Chop Steak	Pork Chop Steak	Pork Chop Steak	Pork Chop Steak	Pork Chop Steak
	Pork Chop Hot/Spicy	Pork Chop Hot/Spicy	Pork Chop Hot/Spicy	Pork Chop Hot/Spicy	Pork Chop Hot/Spicy
	Pork Chop Paksiw	Pork Chop Paksiw	Pork Chop Paksiw	Pork Chop Paksiw	Pork Chop Paksiw
	Pork Binagoongan				
	Menudo Guiniling	Menudo Guiniling	Menudo Guiniling	Menudo Guiniling	Menudo Guiniling
Chicken	Fried Chicken	Fried Chicken	Fried Chicken	Fried Chicken	FriednChicken
	Liver Guizzard	Liver Guizzard	Liver Guizzard	Liver Guizzard	Chicken Hot PaSTEL
Specials	Bopis	Pork Menudo	Embotido		Dinuguan
Eggs	Egg Sarciado	egg/Chicken Curry	Egg Sarciado	Egg Curry	
MENU PLAN	ASSIGNED STAFF				
	Monday	Tuesday	Wednesday	Thursday	Friday
Hotdog Sandwich	Hotdog Sandwich	Hotdog Sandwich	Hotdog Sandwich	Hotdog Sandwich	Hotdog Sandwich
Ham and Egg Sand	Ham and Egg Sand	Ham and Egg Sand	Ham and Egg Sand	Ham and Egg Sand	Ham and Egg Sand
Pizza Bread	Ham Roll	Pizza Bread	Ham Roll	Pizza Bread	
Nachos	Fries	Nachos	Fries	Nachos	
Kikiam/Sballs	Kikiam/Sballs	Kikiam/Sballs	Kikiam/Sballs	Kikiam/Sballs	
Kwek 2	Kwek 2	Kwek 2	Kwek 2	Kwek 2	
Minani	Minani	Minani	Minani	Minani	
Potato Fries	Cheese Stix	Potato Fries	Cheese Stix	Potato Fries	
Camote Fries	Banana Q	Maruya	Nilagang Saging	Camote Q	
Palitao	Sahagobe	Buchi	Maja Blanca	Cassava Cake	
Turon	Turon	Turon	Turon	Turon	
Nilagang Mais	Assorted Bread	Nilagang Mais	Assorted Bread	Nilagang Mais	
Mais con Yelo/Halo2	Mais con Yelo/Halo2	Mais con Yelo/Halo2	Mais con Yelo/Halo2	Mais con Yelo/Halo2	
SHORT ORDERS MOST ESPECIALLY PM					
	Hamchilog	Bacchilog	Chicken Chizlog	Hamchilog	Hotdogchilog
MENU PLAN	Assigned Staff				
	Monday	Tuesday	Wednesday	Thursday	Friday
Calamansi Juice	Dalandan Juice	Calamasi Juice	Dalandan Juice	Calamansi Juice	
Buko Juice	Melon Juice	Pieapple Juice	Buco Juice	Melon Juice	
Chocolate	Chocolate	Chocolate	Chocolate	Chocolate	
Iced Tea	Palamig	Iced Coffee	Iced Tea	Palamig	
Salads	Macaroni Salad	Potato Salad	Garden Salad	Lettuce Cucumber	Salted Egg Tomato
			Ampalaya Salad		
Fruits available in season					
Desserts	Jelly Salad		Coffee Jelly	Fruit Salad	
	Cup Noodles	Cup Noodles	Cup Noodles	Cup Noodles	Cup Noodles
	Cuo Canton	Cuo Canton	Cuo Canton	Cuo Canton	Cuo Canton
	Coffee	Coffee	Coffee	Coffee	Coffee

c) Major Challenges

The major challenge to the school is the continuing education of students on healthy food towards improving their diets and changing their unhealthy food preferences in the light of advertisements and marketing strategies of commercial food companies as well as local food providers near the school. Some students would rather order from burger and fries commercial establishments in the area and have these delivered to the school than buy food from the school canteen.

Best Practices of the School Canteen**a) Regular training and upgrading of staff skills**

Since the school is a Technical Education Skills Development Authority (TESDA)-accredited training center, SAPC makes use of the competencies and skills of its faculty for staff training. It offers training on bread, pastry making, and cookery. These training programs have a big impact on food handling and sanitation and ensuring the quality of the food served.

The training programs are supported through scholarships from the congressman of the district. When there are more scholarships than needed by the faculty and staff, these are given to parents of students who are interested to be part of the program. Many of the parents who have participated in these training programs have turned their skills into full use by becoming entrepreneurs, baking and selling bread and pastries online. The added income benefits the families of the students.

b) Optimizing the school canteen as a learning venue

The SAPC does not only use the canteen as a practicum area for its food-related subjects, it also engages the canteen in its LEARN Program. LEARN is the Learn and Earn apprentice program for the tertiary and senior high school students. This program focuses on qualitative cooking, cookery, and catering. The students assist the staff in the development of standard recipes and their preparation. Students can develop products based on what they learned in school and sell or earn from these. They create dishes and compute serving portions. They also provide costing for what are sold in the canteen.

Entrepreneurship is also developed among high school students. A food sale is conducted, usually during the school's foundation day. Students come up with food products, e.g., squid balls, *kakanin*, and sell them. Parents and other guests are invited to taste and buy the foods prepared by the students, and participate in the festivities.

Plans to Sustain the School Canteen Operations and Its Best Practices

The SAPC will continue to upgrade the canteen staff skills on food handling and sanitation to ensure food quality and safety using the training programs/modules that are readily available in the school. The school will also join webinars and other online events related to healthy school canteen. It will continue to innovate on its school canteen management, particularly on its LEARN program. The school is currently building a coffee shop and a bakery on its grounds. These will be open to the public. The former will serve as

learning site for the students on hospitality services and management. The latter will serve as pastry training center. Like the school canteen, Management will ensure hygienic practices and quality assurance.

4. Crisanto Guysayko Memorial Elementary School

Crisanto Guysayko Memorial Elementary School (CGMES) is a public elementary school in Nagcarlan, Laguna, established in 1916. Though it does not state a vision particularly related to the health and nutrition of its students, it adheres to the vision of the Department of Education, to wit “We dream of Filipinos who passionately love their country and whose values and competencies enable them to realize their full potential and contribute meaningfully to building the nation.” CGMES further adds that ‘As a learner-centered public institution, the Department of Education continuously improves itself to better serve its stakeholders.’ The school is expecting a total enrolment of 1543 learners for school year 2021-2022, with 55 teachers.

The CGMES adheres to DepEd Order No. 13 series of 2017 known as the Policy and Guidelines on Healthy Food and Beverage Choices in Schools and in DepEd Offices and DepEd Order No. 28 Series of 2018 on “Policy and Guidelines on the Implementation of OK sa DepEd.” On building health-oriented character, lessons about health and nutrition are integrated in every subject such as in Science, Edukasyon sa Pagpapakatao, Edukasyong Pantahanan at Pangkabuhayan, and Health, which are part of the curriculum mandated by DepEd.

The CGMES follows written policies in operating the canteen and the feeding program which is monitored and evaluated by the Health and Nutrition Personnel from the DepEd division office. It also follows DepEd Order No. 13 series of 2017 as previously mentioned, DepEd Order No. 39 series of 2017, and DepEd Order No. 23 series of 2020 known as the Operational Guidelines on the Implementation of the School-Based feeding Program for the School Year 2020-2021 and 2021-2022.

Brief Description of the School Canteen

Due to the big student population, the school has two canteens. These are well-ventilated, with screens on the windows and doors to keep out flies and mosquitoes.

The school canteens are run by the school canteen manager assigned by the principal. The canteen manager is responsible for the canteen operations during the face-to-face classes. She checks on the food being served to both the learners and the teachers. She also monitors the cleanliness of the canteen and the safety of everyone.

The school canteen manager is assisted by a cook, a dishwasher, a helper, five paid personnel who are responsible for food sales, and volunteer parents. Teachers also help out in the canteen as needed, especially in the case of students in the primary level.

To maintain the routine hygienic behavior of the food handlers, students and other involved parties, as well as to ensure food quality in the school canteen, food handlers and the canteen manager attend seminars/workshops yearly conducted by the Local Government Unit. They also undergo annual medical examinations. Furthermore, the canteen manager

monitors the operations strictly, such as checking personal protective equipment (PPEs), washing and sanitizing hands before preparing and cooking of food to be served.

The food served is being kept in a covered cabinet. To ensure the functionality and hygiene of the canteen, the School Principal conducts regular monitoring of the school canteen facilities like the kitchen, counter, dining area, wash area, stock rooms, and cabinets for cooking utensils and eating paraphernalia. In addition, as an external support to maintain acceptable practices, the Municipal Rural Health Unit personnel inspect the school canteen on a regular basis to ensure that the school is following the operational guidelines.

Canteen earnings are divided into six. The canteen manager submits a canteen monthly report to the school head and different focal persons. The Clinic Fund receives 5 percent, School Feeding Fund receives 35 percent, the Home Economics Fund receives 10 percent, the School Operating Expenses receives 25 percent, the teachers and learners receive 15 percent, and 10 percent for the Revolving Fund. Within a month, expenses are deducted from the entire profit of the canteen.

Major Challenges

Though there are already two canteens, their small size compared to the student population presents challenges. This is compounded by the small number of canteen manpower. There can be long queues and overcrowding and poorer service to students due to the need for speed to be able to attend to all their requirements. This leads to more time needed to be able to order food, with some students getting back late to their next class. Though practices are in place to help address these, the school canteen infrastructure and facilities need to be expanded and improved.

Student patronage is turning out to be a challenge. It is a big challenge for the school to prevent its students from buying sugary drinks, high sodium food, and the likes from stores right outside the school gate. Food in the school canteen may not always be as appetizing to students as those that are marketed and advertised in big billboards and across all forms of media. The school has asked parents to talk with their children on the merits of healthy food found in the canteen or to pack food for them from home. Class advisers have also had conversations on healthy diets and school guidelines with students seen buying from the stores. Fellow students from the Supreme Pupil Government, the student governing body, have also stationed themselves near the gate to try to dissuade schoolmates from buying food outside the school but rather from the canteen. These have not stopped the students from continuing to avail of these kinds of food from the nearby stores.

Best Practices of the School Canteen

CGMES has several best practices, based on relevant DepEd Orders/Policies and Guidelines, as follows:

a) “Project Stop Light”

This best practice follows strictly the food categories stated in the DepEd Policies and Guidelines (Green, Yellow, and Red). To ensure that the foods/drinks sold in

the school canteen are within the safety and nutrition standards, CGMES absolutely follows DepEd Order No. 13 series of 2017. It does not sell food that is in the RED category, meaning they are high in fat, salt and sugar level. Table 5 shows examples of recommended food under the project.

Table 5. Green, Orange, and Red Food of the DepEd.

Category	Drinks	Energy-giving (GO)	Body-building (GROW)	Body- Regulating (GLOW)
	Examples			
GREEN -food and drinks that should always be available in the school canteen; generally low in saturated and trans-fat, sugar, and salt	Milk (unsweetened), Safe and clean water (nothing added), Fresh <i>buko</i> (young coconut) water (unsweetened)	Milled rice, brown rice or iron-fortified rice, corn, oatmeal, whole wheat bread, cassava, boiled banana, boiled sweet potato, boiled peanuts, <i>suman</i> , <i>puto</i>	Fish, shell fish, small shrimps, lean meats, chicken (with skin removed), nuts, eggs	Fresh fruits, green, leafy and yellow vegetables
YELLOW -should be served carefully; contains nutrients but also large amounts of saturated or trans fat, and/or sugar, and/or salt	100% fresh fruit juices	Fried rice, bread (white refined flour), biscuits, <i>banana cue</i> , <i>camote cue</i> , <i>turon</i> , <i>maruya</i> , pancakes, waffles, <i>champorado</i> , pancit, arroz caldo, sandwiches, butter, margarine, mayonnaise	Processed foods such as hotdogs, sausages, burger patties, chicken nuggets, <i>tocino</i> , <i>tapa</i> (still subject to evaluation of saturated or trans fats and sodium as reflected in their Nutrition Facts)	Stir-fried vegetables

Category	Drinks	Energy-giving (GO)	Body-building (GROW)	Body-Regulating (GLOW)
	Examples			
RED -not recommended in the school canteen menu; high amounts of saturated fat, or sugar, or salt	Soft drinks, alcoholic drinks, sports drinks, sports water, flavored mineral water, energy drinks, sweetened waters, powder fruit juices, any product with caffeine, any processed fruit or vegetable juice with added sugar of more than 20 grams	Any jelly, ice crushes, or slushes, ice cream/ice drop/ice candies, cakes and slices, donuts, sweet biscuits and pastries, other sweet bakery products, chocolates, candies and gums, French fries, instant noodles, all types of heavily salted snacks such as chips	<i>Chicharon</i> , chicken skin, bacon, deep fried foods, including fish balls, <i>kikiam</i>	Fruits canned in heavy syrup, sweetened or deep fried fruits or vegetables

Source. DepEd Order 13, S 2017, Policy and Guidelines on Healthy Food and Beverage Choices in Schools and DepEd Offices.

b) “Project Banggerahan”

This project is about the provision of handwashing facilities in accordance with the DepEd Wash in Schools (WINS) program. The project develops and sustain the students’ habit of washing their hands before and after eating.

c) “Project DRINK”

DRINK is an acronym for Daily Rehydration is Important in Nourishing to Keep healthy. It is a school practice to serve healthy beverages to students like using lemon grass, sweet potato leaves and other fruits in season.

d) “Project VIGY”

VIGY is an acronym for Value the Indigenous vegetables in the Garden to feel Young. This project is being incorporated in menu planning by using indigenous vegetables in cooking different dishes like burger patties and siomai.

e) Adoption of *Pinggang Pinoy*

The school follows DepEd Order No. 13 series of 2017, which is a “plate-based food guide, a simple and familiar image associated with eating that provides familiar visual cues about portion size on a per meal basis. Using a familiar food plate model, it shows

the approximate relative proportions of each of the food groups for each consumer to eat a high proportion of fruits and vegetables, eat a moderate amount of energy and protein-rich foods, and consume less fatty and sugary foods. It also suggests drinking lots of water and less of sugary beverages. In addition to a healthy diet, *Pinggang Pinoy* also encourages exercise or physical activity, an important component of a healthy lifestyle". In connection with this project, sample meal plans have been prepared for 3-5 years old, 6-9 years old, 10-12 years old, and female and male adolescents 13-18 years old. It also includes meal plans for males and females from 19 to 59 years old, and even 60 years old and the elderly.

f) Optimizing the Canteen as a Learning Venue

The canteen continues to play an essential role in the instruction and modelling of good eating habits. It provides a service to the school community. At a reasonable price, it provides a range of healthful and palatable food and beverages to support classroom learning. Home Economics Education is being taught at the canteen particularly when the topics involve cooking and food preparation. Some teachers also involve their pupils in the counting of money earned. Towards improving knowledge and skills for canteen personnel, the division office organizes a capacity building for school canteen managers and SBFP focal persons every year.

g) Scheduling break time or recess period by grade levels

Considering the small size of the canteen relative to the big student population, the school schedules break time or recess period by grade levels. This practice avoids crowding, allows the canteen personnel to focus more on providing quality service to students, and ensures that students who want to eat have the time to do so without being late back to class. The primary level gets its recess first, followed by the other levels.

h) Pre-ordering and use of food carts

The school allows students to pre-order their food from the canteen and be readily available by break time. This helps avoid long queues and crowding at the canteen. A school cart is also pushed around the school premises by canteen personnel near break time so that students, particularly those in the primary level, do not need to go to the canteen. This lessens crowding and allows quicker service.

i) Engagement of parents as volunteers

Due to budgetary constraints for additional canteen personnel, selected parents are requested to volunteer in the canteen to augment its staff complement. Parent-volunteers in the school feeding program also volunteer their services in the canteen as needed and when their own schedule allows.

Plans to Sustain the School Canteen Operations and Its Best Practices

The school plans to improve the canteen buildings. However, the school will still need to find the funds for these expansion and improvement. Especially with face-to-face classes expected in the coming months and being mindful of health protocols under COVID-19 conditions, a bigger canteen would be necessary. The school will continue to adhere to the

mandated projects/activities of DepEd relevant to a healthy school environment in general and healthy school canteens in particular. It also plans to upscale and share best practices of their canteen to other schools. It will also continue enhancements, including more diversity, in its menu to attract students back to the canteen rather than patronizing the stores outside the school grounds.

VI

Lessons Learned and Recommendations

A. Lessons Learned

The school canteen can be a multi-functional area. Aside from its primary purpose of food preparation, service, and sales, the school canteen can serve as a learning venue for students to practice and enhance their knowledge and skills learned in the classroom. This multi-functionality of the space can mean efficient use of available space and meeting multi-dimensional objectives at minimal cost to the school.

1. Collaboration and engagement of stakeholders

The participation of all school stakeholders (i.e., students, teachers and staff, families and the community surrounding the school) in relevant school canteen programs and activities are important for successful outcomes. As evidenced by the school practices, engagement of stakeholders can range from giving comments and suggestions on the school menu, to costing of the food being sold in the canteen, to helping in the development of the food to be sold. The engagements of students may also contribute to minimizing the effects of the aggressive marketing of convenient but not necessarily healthy food.

Basic to this engagement is communication and messaging that is clear and understandable by all concerned. Not only will this help avoid conflict, but it will also allow for accomplishing tasks more efficiently and achieve the objective more quickly. Levels and types of engagement may vary as expected but nevertheless should be recognized.

2. Understanding context

Though replicability and scalability are important in best practices, one size does not necessarily fit all. A practice highly successful in one school may not work well in another school. One must account for context, immediately evident or not, that makes one school different from the next.

3. Easy accessibility of students to unhealthy foods remains a challenge

While there are already efforts from the schools to educate students about healthy food choices, the lure of commercial and less healthy foods is still strong among students. Schools must continue discussing safe, healthy and nutritious foods to students in a more interesting and creative way to combat the aggressive marketing of foods that are inappropriate for a healthy life. The availability of local and culturally relevant foods can be optimized by schools as healthier options to change the eating habits of the students.

B. Recommendations

1. Schools must be fully knowledgeable on government policies and regulations related to students' health and nutrition that are applicable in operating a healthy school canteen.
2. Schools should keep the canteen environment safe. Schools should strive to always keep the food service and food display areas clean and the food items/dishes are fresh and safe to eat. Food safety procedures are followed and canteen staff are trained and health certificates are regularly updated.
3. Inclusion and practice of waste management such as setting up recycling bins for plastics, card- boards, glass and sustainable dining, e.g., growing own vegetables, buying foods from nearby markets to reduce carbon footprint, use of recyclable and reclaimed furniture for interior decoration of the canteen premises, reducing food waste.
4. In the preparation of menu cycle and dishes for selling and/or for the school meal, variety of foods should be considered. Children who eat a variety of unprocessed and fresh foods help children to obtain the right amounts of essential nutrients. The menu can also be written in a more attractive manner. Moreover, nutritionists should be consulted by school canteen managers to ensure that the menu is varied, nutritious, and culturally acceptable to the students. However, the dishes should consider skills set of the cook/chef and canteen staff.
5. Continue the promotion of healthy diet and the *Pinggang Pinoy* for Children. Healthy diets mean eating plenty of vegetables and fruits, eating less fat, limiting intake of sugar, and reducing salt intake. Moreover, menu labeling can be introduced. The menu label maybe includes the calories, protein, and fat per serving at the minimum. Involve the students in naming the dishes so that they can feel that their opinion and suggestions matter to the school authorities.
6. Promotional campaigns on healthy eating (e.g., meatless Mondays, reducing consumption of sugar-sweetened beverages in school canteens) must be continued and strengthened. However, evaluation studies can be conducted to determine the effectiveness of such programs.
7. Regular monitoring and evaluation of the school meals programs and school feeding programs should be done with standardized indicators so that it would be easier for schools to check what aspects needs to be improved.

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SUMMARY AND CONCLUSIONS

The six Southeast Asian countries, namely: Brunei, Cambodia, Indonesia, Malaysia, Myanmar, and the Philippines as well as the 24 schools featured in this book provided interesting insights on the variety of policies, programs, and best practices related to healthy school canteen implementation. Similarities and differences are evident among these school canteen-related policies, programs, and best practices to help address the prevalence of various forms of malnutrition problems that affect school children and adolescents in these countries. Conditions as regards the four pillars of a healthy school canteen (i.e., commitment and management, human resources, infrastructure and facilities, and food quality based on SEAMEO RECFON's book on Practical Guidelines on Developing a Healthy School Canteen published in 2018) also vary from country to country as well as from school to school.

1. School Canteen-related Policies and Programs

- a) All the above-mentioned countries have a school health policy/guideline which is issued and implemented by either their Ministry of Health (MoH), Ministry of Education (MoE) or in collaboration with each other. In the case of Indonesia, the country's overall school health policy called *Upaya Kesehatan Sekolah*, is a collaboration among four ministries, namely: Education, Health, Religious Affairs, and Internal Affairs. Such policy/guideline usually encompasses medical, dental, and environmental health aspects affecting school children. To some extent, it also governs the operation of school canteens that includes aspects of food safety, hygiene and sanitation, food and beverages that can either be sold or prohibited at school canteens, as well as several infrastructure requirements. Some countries have separate policies/guidelines on selling foods at school as in the case of Brunei, Malaysia, and the Philippines that are jointly promulgated by their MoE and MoH.
- b) A school feeding program is also common in all the countries which is either conducted within the confines of a school canteen or in any appropriate place within the school campus in the absence of a school canteen. Such policy/program is usually implemented by the MoE. However, the extent to which such policy/program is being carried out in all schools nation-wide was not indicated in the country reports.
- c) There are some policies related to school canteen that are specific to Brunei and the Philippines which are worth mentioning as follows:
 - i. Brunei has a set of standards in grading school canteens which was launched by the country's MoE in 2015 and being implemented in collaboration with the MoH and Ministry of Home Affairs (MoHA). The country's MoH also came up with Standard Operating Procedures for Handling Incident of Food Poisoning at School.
 - ii. The Philippines has a specific set of implementing guidelines on the establishment and management of school canteens in primary and secondary schools issued by the country's Department of Education (DepEd) in 2005.

- d) The country reports do not explicitly mention having a policy that mandates all schools to have a canteen. This could be a matter for consideration. In the case of Malaysia, however, the country report stated that each school has a canteen.

2. School Canteen Commitment and Management Pillar

- a) Most of the schools from all the countries were reported to have a school canteen management team/task force which is usually headed by the school principal. Such team/task force is expected to monitor, address food-related issues and concerns of the students and identify areas needing improvements in the daily operation of the school canteen. The members consist of school teachers and administrative staff. Some schools also include representatives from parents and canteen vendors in the team/task force. Few schools involve students in the management/operation of their school canteens. This maybe an indication that students are still being regarded as only customers/users of the school canteens.
- b) Except for two schools from the Philippines, the rest of the schools did not indicate having their own written policies/guidelines in managing their respective canteens based on the country reports. In most cases, the schools just follow their government policies particularly on ensuring food quality, safety, hygiene and sanitation.
- c) Majority of the schools, except for those from the Philippines, were reported to contract out vendors to operate their canteens. The selection of the vendors is either based on the internal policy of the schools or in compliance with the criteria set by either their MoE or MoH as in the case of Brunei, Cambodia, Indonesia, Malaysia, and Myanmar. The vendors sign a contract with the schools for a year but is renewable depending on their performance.
- d) Some schools reported that they conduct regular meetings with the vendors to remind them on complying with government policies and provide feedback on areas needing improvements in the operation of their school canteens. However, the frequency of holding these meetings is not clearly stated in the country reports.

3. School Canteen Human Resources Pillar

- a) Only the schools from the Philippines were reported to have specific regular staff members designated to operate their school canteens from menu planning to preparing the foods to be sold to students and teachers. The rest of the schools designate their teachers and administrative staff as school canteen management team/task force for the sole purpose of monitoring the operation and ensuring that the vendors comply with the government regulations as stipulated in their contracts.
- b) Most of the schools indicated that they rely on their MoH to provide capacity building activities to their school canteen management team/task force and vendors especially on the topics of food safety, and hygiene and sanitation. However, the regularity of such activities was not clearly indicated in the country reports. Most of the schools would only contract out vendors who have already obtained training certifications

on topics abovementioned from their MoH. In the case of the Philippines, two of the schools were found to provide continuous skills development to their canteen management team as regular employees particularly on the aspects of food preparation and menu planning.

- c) Few schools indicate that they require the canteen vendors to wear proper attire (i.e., with apron, hair cap/net, mask, and gloves) when serving food as in the case of Malaysia, Myanmar and Cambodia.
- d) The country reports indicated that limitation in human resources in terms of number and knowledge in effectively managing a school canteen is one of the major challenges in most of the schools.
- e) Some schools involve students in cleaning the surroundings of the school canteen as in the case of one school in Malaysia as well as cleaning their own eating utensils after meal as in the case of one school in Cambodia.
- f) Most of the school canteens in all the countries operate on a self-service manner.

4. School Canteen Infrastructure and Facilities Pillar

- a) The conditions of the school canteen in all the countries vary from each other in terms of size, structure, and set up. Some are built as a separate structure while some are within the school building. Some have single food counter being managed by one vendor while some have various food stalls operated by different vendors. Some can accommodate 50 persons at one time while some cannot. Some have kitchen facilities while some do not have. Some provide tables and chairs while some only have food counters and students eat their food in a multi-purpose center or in classrooms. These variations affect the kind of services that the school canteen can offer to their customers.
- b) Despite the conditions mentioned above, supervised cleaning operating procedures of canteen facilities was reported being done regularly by most of the schools through designated staff members to comply with government hygiene and sanitation regulations.

5. School Canteen Food Safety and Quality Pillar

- a) As mentioned above, all schools and their school canteen vendors are required to follow the policies/guidelines of their respective countries on ensuring food safety and quality as well as hygiene and sanitation. However, full compliance with these policies/guidelines, particularly among school canteen vendors, remain a major challenge to the schools. Regular and purposive monitoring and evaluation of the canteen operation is necessary.
- b) Some schools promote the selling of local and culturally relevant foods as this is perceived as a healthier option for their students as in the case of Indonesia, Myanmar, and the Philippines.

6. School Canteen Best Practices

- a) From the 24 schools, 94 healthy school canteen best practices were identified which are either similar with or unique from each other.
- b) Majority of the schools share two common best practices, namely: adherence to government policies on selling healthy and safe foods, and use of the canteen as a learning venue on health and nutrition matters and other extra-curricular activities. This indicates that the schools recognize the importance of such policies and the existence of a canteen for the benefit of their students as well as other members of the school community.
- c) Adopting proper waste and environmental management practices within the canteen surroundings is a common practice in at least a third of the schools.
- d) Among the best practices that are unique to at most two particular schools include:
 - i. posting the caloric contents of foods sold as in the case of one school in the Philippines,
 - ii. regular measurements of students' body mass index (BMI) as in the case of one school each in Malaysia and the Philippines,
 - iii. promoting canteen monthly menu to parents via social media as in the case of one school in Malaysia,
 - iv. Selling of school farm harvests in the canteen as in the case of two schools in Cambodia and one school in Myanmar,
 - v. using canteen profit for school development or charitable activities as in the case of one school in Cambodia,
 - vi. pre-ordering of food or scheduling of canteen services by grade level to avoid crowding in the canteen as in the case of one school each in Cambodia and Malaysia,
 - vii. regular training of canteen staff as in the case of two schools in the Philippines,
 - viii. offering special food to students with disabilities and according to their religious beliefs as in the case of two schools in Cambodia, and
 - ix. tailoring healthy school canteen implementation in the school curriculum as in the case of one school in Indonesia.
- e) These best practices were based on the opinions of the selected schools given their existing situations and may not necessarily be according to universal set of criteria of what a best practice is. Nevertheless, these best practices enable the schools to operate their school canteens toward ensuring the health and nutrition of their respective school communities.
- f) These best practices can fall in any of the school canteen pillars.

Healthy School Canteen Policies, Programs, and Best Practices in Southeast Asia

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SEAMEO RECFON

Jalan Raya Utan Kayu No. 1A RT 001 RW 008
Kelurahan Utan Kayu Utara, Kecamatan Matraman
Jakarta Timur 13120
Telp: +62-21 2211 6225
Fax: +62-21 2211 6456
Website: www.seameo-recfon.org
Email: information@seameo-recfon.org

 www.seameo-recfon.org  @SeameoRecfon  Seameo Recfon
 Seameo Recfon  @SeameoRecfon

