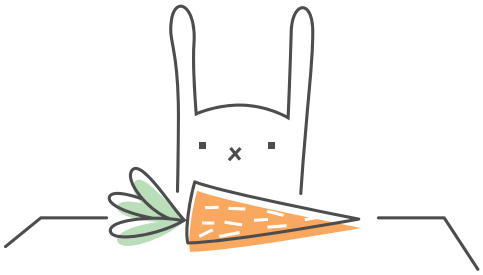
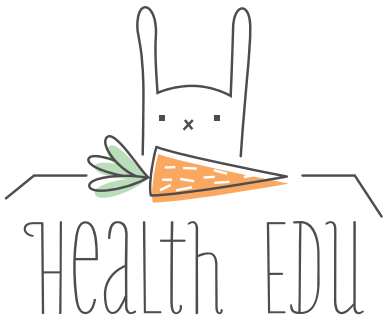
METHODICAL MATERIAL



METHODOLOGICAL MATERIAL FOR HEALTH EDUCATION

in kindergartens, pre-primary and primary schools



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METHODOLOGICAL MATERIAL FOR HEALTH EDUCATION IN KINDERGARTENS, PRE-PRIMARY AND PRIMARY SCHOOLS

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This publication reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein

INFORMATION ABOUT THE PROJECT

Innovative teaching methodology of health friendly nutrition development and practice in pre-primary and primary education (HealthEDU)
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CONTENTS

FOREWORD

There are many different approaches as to what should be called healthy eating. Every individual, family or community decides what is the most appropriate for them with regard to their values, possibilities and other factors. Small children imitate what they see, especially during the first seven years of their lives; they observe what mother and father, educators or other surrounding adults as well as senior brothers and sisters are doing. They perceive what internal views and convictions govern the life, thoughts and behaviour of adults. Thus, the decision of adults to undertake healthy lifestyle and eating habits has a direct impact on forming healthy eating habits of a child.

A child frequently starts attending some educational institution during the first years of his/her life when the foundation of his/her life is laid: some start with pre-schools, others attend day care centres, still others start from primary school. It means that a child is educated not only at home but in a chosen educational institution as well. Therefore, it is important that attitudes, rhythm, eating peculiarities would make a unified harmony both at home and in the educational institution.

The HealthEDU project seeks to develop nutrition literacy not only of children but of the whole educational institution community starting with sharing of good experience and practice, overviewing peculiarities in educational institutions in various European countries, monitoring tendencies, discussing the benefits and meaning of healthy eating as well as harm of malnutrition, talking about the methods, possibilities and tools of education. As a child is a curious and inquisitive personality that seeks balance between ordinary and familiar things, which give the feeling of safety, and those which are new and yet unexplored, the project team suggests developing nutrition literacy

by means of game, narrative, creative activities. We believe that holistic nutrition education oriented towards the development of a healthy child should not be based on prohibitions or orders but should rather seek to convey an opinion that is based on deep knowledge of a human being and his/her development. It is very important to have knowledge, while what will be used in a particular situation will depend on a free choice of a person that participates in that particular process.

We hope that everyone will find the information in this book useful for herself/himself and that it will be a starting step in one's further development.

We expect that the material of this book and the great experience of professionals working in the field of health education and nutrition literacy development will help you to understand the importance of healthy nutrition, will give you the ideas and inspiration for educational activities with kids on health-friendly eating habits development.

We wish you all the best in doing this hard but very important educational job!

HealthEDU Project team

ACKNOWLEDGMENT

I sincerely wish to thank everyone who contributed to the implementation of the project and put the effort that this work will see sunlight; to everyone, who supported the idea, the purpose, the activities of the project, who saw this work important; to everyone who has provided insightful remarks in its initial version, as every insight deserves attention and encourages growth and development. A big thank you to the team of Education Exchanges Support Foundation who advised and supported us. THANK YOU to the educational institutions – project beneficiaries - that joined the project, participated in the seminars, expressed their opinion on the development of the methodical material and in general, the development of the project, as well as appreciated our initiatives and organized a lot of events according to the suggested educational activities, guidelines for the educational events related to health friendly habits development, were open to the innovations, knowledge and challenges. THANK YOU to the project team who shared the knowledge, their good practice and dedicated a lot of time throughout the project. The activities of this project, their recognition in educational institutions, the desire of the institutions to maintain the goal of the project, allow us to believe that the initiatives of this project will be continued and implemented on a wide scale in European educational institutions, communities and families.

Project manager, Vida Drąsutė

EXECUTIVE SUMMARY

This methodical material is one of the results of Erasmus+ KA2 Strategic partnership project *"INNOVATIVE TEACHING METHODOLOGY OF HEALTH FRIENDLY NUTRITION DEVELOPMENT AND PRACTICE IN PRE-PRIMARY AND PRIMARY EDUCATION" (HealthEDU), Project ref. No.:* 2016-1-LT01-KA201-023196 which is developed in line with the creation of innovations in the field of School Education . 6 European countries, 7 institutions (partners)[2], were involved in the production of the material. Every country has cultural particularities, different experience in the working area and, in some cases, also different working ways in teaching healthy nutrition. Therefore, joined experience, discussions and sharing of good practices led to the production of this methodical material.

This book is full of information and activities, which will help teachers and parents develop and improve children's Healthy Nutritional Habits. While developing this material, authors always kept in mind one of the project target groups, which is children between 4 and 10 years old and as well as the other very important target group, which encompasses the rest of the community within the educational institutions, surrounding the children, i.e. pedagogues, parents or family members,

2
VšĮ „eMundus", Lithuania – coordinating institution
Trakai district municipality Pedagogical Psychological Service (till 2017 10 Trakai Educational Assistance Authority) (orig. Trakų rajono savivaldybės pedagoginė psichologinė tarnyba), Lithuania
Pixel Association (orig. Pixel Associazione), Italy
Foundation for development of the cultural BPOCS (Фондация за развитие на културния и бизнес потенциал на гражданското общество), Bulgaria
Florida educational cooperative group (orig. Florida centre de formacion sociedad cooperativa), Spain
Kayseri Provincial Directorate of National Education (orig. Kayseri Il Milli Eğitim Müdürlüğü), Turkey
European Lab for Educational Technology, Greece

kitchen staff, nutrition specialists, educational institution's staff and in general adults, who educate children or have/could have influence on their education.

Teams of professionals (researchers, pedagogues, nutrition specialists, managers, advisers), who work in the area of healthy nutrition or in general in the sphere of education and have previous long-lasting experience in working in this area in their countries, created this material, which is expected, first of all, to be helpful to educators/pedagogues in kindergartens, pre-primary schools, primary schools, as well parents, and educators who work or wish to work in the field of nutrition literacy development or kids' education in this field. Second, for those who prepare food and wish that the food would healthy, would be made in a health friendly way, would be well presented and tasty.

Moreover, this book is meant for everyone who is interested in an innovative teaching methodology of health friendly nutrition development. The methodological book also presents the practical exercises, training examples, gives tips and provides educational games, which help children to grow as conscious users in the healthy nutrition area from an early age.

The book has six main parts and annexes added as additional material and ready to use practical exercises for kids.

The 1st part which is named ***Contextual framework of healthy nutrition in education*** is mainly targeted to those who surround the children and influence their habits (parents, teachers, extended family members and others). The chapters of this part focus on the need for nutrition education in kindergartens and primary schools, health issues that are related to bad eating habits. The Chapter *Concept and importance of nutrition* provides information about why health and nutrition education in kindergartens and primary schools is vital and especially important for pre-school and school-age children, how the school environment impacts kids behaviour, how to implement Nutrition Education, what are the results of that. Chapter *Health issues based on Nutrition* is dedicated for parents, teachers and health educators who want to find out about the science behind nutrition and the risk of disease. It should be helpful for those studying or working in the field of nutrition and health (e.g. schools, kindergarten) and also those who would like more detail on nutrition science. Chapter *Emotional aspects of healthy nutrition* describes topics such as cultural, psychological aspects of food, emotional eating and emotional influences on food choices.

The 2nd part which is named ***Methodological and pedagogical framework for introducing health nutrition education*** is mainly targeted at teachers, educational practitioners and those who are interested in applying a nutrition education strategy and in designing pedagogically meaningful activities to encourage adoption of healthy eating habits from an early age. This part encompasses chapters such as *Key pedagogical and methodological considerations* which speak about Cooperative learning, Project-based learning and the goals, strategies, evaluation of these theories, as well as about basic skills development. In this part you can find a focus on such *Pedagogical techniques* as storytelling, role-playing, educational games, brainstorming, working in groups, enhanced lectures,

demonstrations/visits/guest lectures-learning from experts, *within HealthEDU framework*.

The 3rd part is a Practical part named ***Practical framework for nutrition education***. Part *Design classroom activities for nutrition education* in this part gives instructions to teachers, presents the thematic areas in nutrition education classroom activities, embraces the food pyramid and learning activities, suggested for implementation in the classroom. In this part one of the chapters is dedicated to discuss about Parental engagement matters: why family involvement in the learning process is important; reasons for the lack of family involvement in the learning process; new approaches for family and teacher collaboration in favour of healthy eating for children. The third chapter *Creative and entertaining ways to encourage children to eat healthily* suggests kids friendly activities', which could be developed in school and at home. Here you will find the links to suggested educational movies, e-books and other material.

The 4th part named ***What is going on in the kitchen*** is dedicated more to those who work in the canteen or prepare and serve the food. This part speaks about the importance to engage kitchen staff in school meetings on issues related to health-education; about the importance of training courses for kitchen staff on such topics as the educational aspect of food, the educational power of food, food as an educational tool at breakfast/lunch/dinner; Nutritional aspects.

The 5th part presents ***Good European practises in the field of healthily nutrition education***, which were collected in the first stage of the project by all partners taking into consideration local, regional, national and international practices.

The 6th part named ***Nutrition in everyday life*** speaks about the importance of a rhythm in nutrition, suitable meal, suggested choices for daily meals; gives advices about Food planning and describes why it is important to plan the menu. Chapter Behaviour at the table presents the table manners, capabilities of a child and education of table manners according to age, importance of family members eating together, communication at the table, Involvement of children in cooking, suggested eating rules, as well as some tips for preparation for eating, table arrangement rules, information about cutlery. The book is finalised with the chapter Food preparation guidelines for all (educators, kitchen staff and family).

You can find all the material of the project on: healthedu.emundus.eu

You can find good practice examples, impressions from the educational events, as well information and comments in our community social network: facebook.com/healtheducommunity

Enjoy reading and good luck in practicing!

CONTEXTUAL FRAMEWORK OF HEALTHY NUTRITION IN EDUCATION

I PART

This part is focused on the need for nutrition education in kindergartens and primary schools. Nutrition education can have a positive effect on the way according to which children make their food choices, develop their eating habits and shape their perspective of health and wellness for the rest of their life. The chapters of this part focus also on health issues that are related to bad eating habits supporting the claim that teaching nutrition education may be a crucial factor in preventing childhood diseases that result from unbalanced dietary and lifestyle habits. The chapters of this part are mainly targeted at those that surround children and influence their habits (i.e., parents, teachers, extended family members and others).

1 CONCEPT AND IMPORTANCE OF NUTRITION

1.1 THE IMPORTANCE OF HEALTH AND NUTRITION EDUCATION IN KINDERGARTENS AND PRIMARY SCHOOLS

> Nutrition education has been defined as "any combination of educational strategies, accompanied by environmental supports, designed to facilitate voluntary adoption of food choices and other food and nutrition-related behaviours conducive to health and well-being; nutrition education is delivered through multiple venues and involves activities at the individual, community, and policy levels." (Contento, 2008).

Nutrition is a major environmental influence on physical and mental growth and development in early life. Fostering healthy eating practices and regular physical activity early in life has a potentially major impact on both the health and well-being during childhood and later stages in life (CDC, 1996). Even during infancy food habits can influence preferences and practices in later life 1–4. As they grow and develop, children steadily and progressively acquire and learn eating habits and practices. Needless to say, nutrition education is a key element to promoting lifelong healthy eating and ex-

ercise behaviours and should start from the earliest stages of life.

Initially, family plays the most significant role in the process not only as responsible for feeding the child, but also by setting norms within the family, acting as role models, encouraging certain behaviours and rewarding or limiting other actions (Birch & Fisher, 1998). However, it is during school age when the social environment of children diversifies and extra familial influences progressively become more of a reference point.

1.1.1 The School Environment matters

> Schools are a critical part of the social environment that shape young people's behaviours as they provide opportunities to practice health-promoting behaviours (Parcel *et al.*, 1989).

School health education takes place both inside and outside the classroom. The policies that a school adopts, the physical and social environment it provides, the curriculum it chooses, and the quality and methods of instruction all have the potential to significantly affect the health of students and others at school. The school environment can reinforce or hinder messages delivered through the health education curriculum and can promote or create barriers for healthy behaviour (Carter & Swinburn, 2004).

It is obvious that schools provide the most effective and efficient way to reach a large segment of the population: young people, school staff, families and community members (Aldinger & Jones, 1998; Dixey *et al*, 1999). And when combined with the access to nutritious, high-quality food already provided in schools, nutrition education is undoubtedly one of the most effective strategies to encourage healthy eating behaviours and improve child health outcomes.

One reason why nutrition education in the school environment is so powerful is that no other public institution has as much continuous and intensive contact with the kids (Carter & Swinburn, 2004). In addition, in this period, children are more independent, start making their own food choices and take personal decisions regarding what they eat. (Story *et al*, 2002). But it must be remembered that the context in which students learn about healthy eating is key in determining how receptive they are to nutrition education (Crockett and Sims, 1995).

It is clear that school-based nutrition education is an important component of comprehensive school health. Schools can reach almost all children and adolescents during their first two decades in life and are ideal settings for influencing health (Carter & Swinburn, 2004) and as such teaching nutrition to children throughout their educational experience is key to developing healthy eating habits.

1.1.2 How to best implement Nutrition Education

Children and young people need to enhance their competence as informed consumers able to perform their food choices in a complex society with a wide variety of available food. School-based nutrition education should focus not only on nutrition information, but also develop skills and behaviours related to areas such as food preparation, food preservation and storage; social and cultural aspects of food and eating; enhance self-esteem and positive body image and consumer aspects (Dixey *et al*, 1999). According to Contento, "nutrition education is more likely to be effective when it focuses on behaviour/action (rather than knowledge only) and systematically links relevant theory, research and practice."

Implementation is a complex and usually slow process. Characteristics of the teachers, educational materials and support provided by programme leaders and staff determine the level of implementation of the curriculum (Baranowski & Stables, 2000; Kealey *et al*, 2000). Pre-testing the curriculum allows adaptation and improvement in the design and time for the programme to gain acceptance (Hoelscher *et al*, 2002). Teachers often complain about the lack of explicit curriculum, suitable materials or training experience.

> To be effective, nutrition-promotion strategies must be creative, engaging, inexpensive and widely disseminated. It should also consider the needs and interests of students, teachers and the school.

Other features that contribute to gain effectiveness are the provision of adequate time and intensity for the intervention, involvement of families, particularly for younger children, and incorporation of self-assessment and feedback in interventions for older children. School meals provide a valuable opportunity for nutrition education. The emphasis on environmental and behavioural factors in successful school-based physical activity and nutrition interventions highlights the importance of involving parents and other community members.

Nutrition concepts need to be reinforced throughout the year, and students can learn about food and nutrition as part of many subjects, including math, science, social studies, physical education, and health. In addition, nutrition education should extend beyond the classroom and needs to involve multiple channels of communications. Teachers, food service professionals, and family members all play a role in promoting lifelong healthy eating habits. Therefore, nutrition education should be linked with the school food environment and at home.

Nutrition education should be as comprehensive as possible and be designed to help students:

- Improve health literacy by learning about essential nutrients, the benefits of healthy eating,

and safe food preparation;
- Gain nutrition-related skills, such as understanding food labels, comprehending nutrition information, and evaluating commercial food advertising;
- Assess personal eating habits by using food guidance systems, such as MyPlate and the 2010 Dietary Guidelines for Americans[3].

1.1.3 Results of Effective Nutrition Education

Scientific evidence supports that prevailing food patterns during infancy and childhood influence growth and development; have an impact on health not only during this period of life, but also on the potential development of risk and protective factors related to the onset of chronic diseases later in adulthood (Nicklas *et al*, 1993). Children and young people who learn healthy eating habits, are encouraged to be physically active, to avoid smoking and to learn to manage stress, have the potential for reduced impact of chronic diseases in adulthood. Although it is not within the scope of this piece of writing, it is well worth mentioning that food habits that persist during adolescence are more likely to track into adulthood (Kelder *et al*, 1994).

Nutrition education has been effective in helping children achieve a better healthy lifestyle and weight, increasing fruit and vegetable consumption, creating positive attitudes toward fruits and vegetables, and may improve academic outcomes. Nutrition education gets children excited about eating healthy foods provided through child nutrition programs and making other healthy food choices, provides children with knowledge and skills for living healthy lives, and creates an environment where healthy choices are the easy choices. Through nutrition education, children gain experiences in cooking, tasting, gardening, and learning about food to become empowered to take responsibility for their own wellbeing.

An additional and possibly unexpected benefit of nutrition education is the positive impact on academic outcomes that some studies have shown. Nutrition during childhood contributes not only to maintaining health, but also to optimizing learning capacities - studies support that good nutrition contributes to improving the wellbeing of children and their potential learning ability, thus contributing to better school performance.

On a more practical note, a research shows that 35-50 hours per year of behaviourally focused nutrition education is optimal to provide students with the motivation and skills they need to make healthy choices.

3 https://health.gov/dietaryguidelines/dga2010/dietaryguidelines2010.pdf

1.2 NUTRITION: WHY IT IS IMPORTANT FOR THE SCHOOL-AGE CHILDREN

Social and economic development of a country primarily relies on its potential of human resources. All living beings, with no exception, need nutrients in order to survive (Yılmaz & Özkan, 2007). To be adequately nourished is critical for the human beings to feel safe for fulfilling their other needs (Erten, 2006). With this need of a country to have a healthy, productive and skilful human potential, the individuals in the society, especially the babies and children, who are in a fast growth and development period, must have a well-balanced and adequate nutrition (Baykan, 1999). Thus, nutrition is crucially important in all periods of life, from fetal life to old age (Pekşen-Akça, 2010).

> Nutrition is processing and using the nutrients in the organism to grow, develop, keep healthy and live on productively for a long time.

There is a lot of scientific data suggesting that when one of these nutrients is missing in the organism or taken more or less than the required amount growth and development are stunted and health problems occur (Baysal, 2004). The aim of nutrition is to provide the individuals with adequate energy and nutrients that they need according to their age, gender, working and other specific conditions (Kılıç & Şanlıer, 2007). Life has different stages such as fetal, childhood, adolescence, youth, adulthood and old age. Being healthy during all these stages primarily depends on a well-balanced and adequate nutrition.

A well-balanced and adequate diet is defined as consuming different types of nutrients in adequate amounts, without a loss in nutritional values and deranging effects on health that individuals need and use to grow, live on and perform their activities (Açıkgöz, 2006).

1.2.1 Nutrition in pre-school ages

Today, everybody agrees on the importance of nutrition during the pre-school ages. Children have a high learning capacity during this period when personality also begins to be formed (Aral et. al., 2003). During this period, families and teachers play a major role also in forming the children's nutritional habits, just like all other habits during the pre-school age (Neyzi & Ertuğrul, 1989:358). It is well known that pre-schoolers and young people are the ones who are most seriously influenced by malnutrition. Children primarily gain nutritional habits during the pre-school age, therefore these habits will not only influence the rest of their lives but also will be the main cause of the diseases in the future (Demirkaynak, 2004), (Kaya, 1999). From this point of view, individuals must be educated about an appropriate nutrition (Dereköy, 2006). This education requires highly skilful and quali-

fied trainers. Teachers, trainers and qualified instructors working as part of children education are the key to an efficient and high-quality learning environment. They are good at creating a high-quality learning environment as well as being a role model, which can cause changes in the behaviours of children. As the most powerful role models, the educational staff should listen to the children and learn their least favourite foods by letting them express themselves. Furthermore, to change the children's negative attitudes towards the foods the educational staff should consume these certain foods or drinks when they are together and also guide children to the adequate and balanced eating habits.

Children usually learn new things and behaviours by imitating people at school and at home. This means that the personality of a child is formed during the pre-school ages or, in other words, the habits that will strongly influence the adulthood behaviours are acquired during this stage. By the same token, the positive eating habits that children gain during these ages will influence their life in the future, and for this reason they will certainly help to prevent any diseases that may occur in the future (Merdol 1999), (Kaya 1999).

Children aged 7-10 years are receptive, interested in new, reasonable things, activities and absorb information as well because they are already school-age children. Therefore, as the most critical learning occurs in this period, adjustment of the amount and the balance of the nutrients that should be consumed by children is evidently of crucial importance. While children in this period need a lot of proteins, cereals, fibres, fruits and vegetables they need a little amount of carbohydrates and fats, nonetheless this group of nutrients should not be exaggerated. Generally, parents tend to prepare foods rich in carbohydrates and fats for their children as they think it will increase and promote learning. Such a diet is undoubtedly wrong as it slows the learning process and causes obesity.

Gaining healthy nutritional habits during the pre-school ages is the core of the following concerns:

- Supporting children's healthy growth and development;
- Preventing such diseases as iron-deficiency anaemia, poor nutrition, obesity and early tooth loss;
- Improving lifelong health and reducing the risk of chronic diseases (cardiovascular diseases, type-2 diabetes mellitus, hypertension, some types of cancer and osteoporosis, etc.) in adulthood (Turkish Republic, Ministry of Health, 2013).

How to form nutritional habits of pre-school children:

- The food given to children should be less than the amount they are estimated to consume;
- This period is the best time to teach children that eating is a need;
- Signs of hunger and craving of children should be carefully observed and satisfied;
- Children should be allowed to eat on their own;
- Children should not be forced to finish everything on the plate;
- The meals should be served at favourable times;

- It should be always kept in mind that children are at considerably higher risk of food-related diseases.

1.2.2 Nutrition during school ages

In today's world, people spend the important part of their life at school; a part of childhood, the adolescence and youth pass here. In the period from 6 to 12 years, children grow physically intensivel, sometimes experience psychological problems, begin to gain academic and professional skills and their personalities begin to shape. For this reason, it is widely accepted that this period is the most convenient time for the individuals' psychological and social development, fast physical growth, gaining behaviours that will last during the entire life, learning new things and gaining habits. Insufficient weight or obesity, anaemia (bloodlessness), vitamin deficiency, iodine deficiency and tooth decays are the most common nutrition-related children diseases in this period. In addition to these diseases, the increasing number of children with obesity and the risk of metabolic syndrome of children of these ages are thought to be closely interrelated.

As a result, these children become susceptible to diseases, easily get sick, and have heavier conditions of illness than normal which also could cause the missing of school and poorer academic achievements. Training school administrators and educational staff on healthy nutrition is of crucial importance to increase school achievement, reduce educational expenses by preventing grade retention, and raising stronger and healthier generations.

Nutrition of children should be arranged considering their age, gender, weight and physical activity. Nutritional habits of school-age children are highly under the influence of their families and peers. Moreover, commercials, uncontrolled nutritional conditions at school promote wrong nutritional habits of children. For these reasons, training children, parents, school administrators and educational staff is evidently important for providing children with a well-balanced and adequate diet. Growth and development of a child is the most apparent indication of a well-balanced and adequate diet. The adequacy of a child's growth can be evaluated by measuring and comparing the weight and height of the child to the standard values for his/her age and gender on the growth chart.

2 HEALTH ISSUES BASED ON NUTRITION

This section is dedicated to parents, teachers and health educators who want to find out about the science behind nutrition and risk of disease. It should be helpful for those studying or working in the field of nutrition and health (e.g. schools, kindergartens) and as well as those who would like to get more detail about nutrition science.

2.1 OBESITY AND LEARNING ACTIVITIES THAT CAN BE IMPLEMENTED IN THE CLASS

Childhood obesity is one of the most serious public health challenges of the 21st century. The problem is global particularly in urban settings (WHO. Global Strategy on Diet, Physical Activity and Health: Childhood overweight and obesity, 2017). The prevalence of overweight and obesity among children aged 6–9 years in 15 Europe countries (Belgium / Flanders), Bulgaria, Czech republic, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, Norway, Portugal, Slovenia, Spain, Sweden) is up to 49% of boys and 43% of girls who are overweight and up to 27% of boys and up to 17% of girls who are obese (Wijnhoven et al., 2014). Overweight and obese children are likely to stay obese in adulthood and more likely to develop non-communicable diseases like diabetes and cardiovascular diseases at a younger age. Overweight and obesity, as well as related diseases, are preventable

in many cases. Prevention of childhood obesity therefore needs high priority (WHO. Global Strategy on Diet, Physical Activity and Health: Childhood overweight and obesity, 2017).

2.1.1 Measuring overweight and obesity

It is difficult to develop one simple index for the measurement of overweight and obesity of children and adolescents because their bodies undergo a number of physiological changes as they grow. Depending on the age, different methods to measure a body's healthy weight are available (Leroy et al., 2015).

Body Mass Index (BMI) is a person's weight in kilograms divided by the square of height in meters. For children and teens, BMI is age- and sex- specific and is often referred to as BMI-for-age. A high BMI can be an indicator of high body fatness. BMI does not measure body fat directly, but research has shown that BMI correlates with more direct measures of body fat. BMI can be considered an alternative to direct measures of body fat. In general, BMI is an inexpensive and easy-to-perform method of screening weight categories that may lead to health problems (CDC. About Child & Teen BMI, 2017).

Calculating BMI using the BMI Percentile Calculator involves the following steps:

1. Measure height and weight. (see for the requirements here: Measuring Children's Height and Weight Accurately At Home for guidance).
2. Use the standard BMI formula (BMI = mass (kg) / height (m)2)
3. After BMI is calculated for children or teens, it is expressed as a percentile which can be obtained from either of figures (Fig.1 & Table 1) (CDC. About Child & Teen BMI, 2017)..

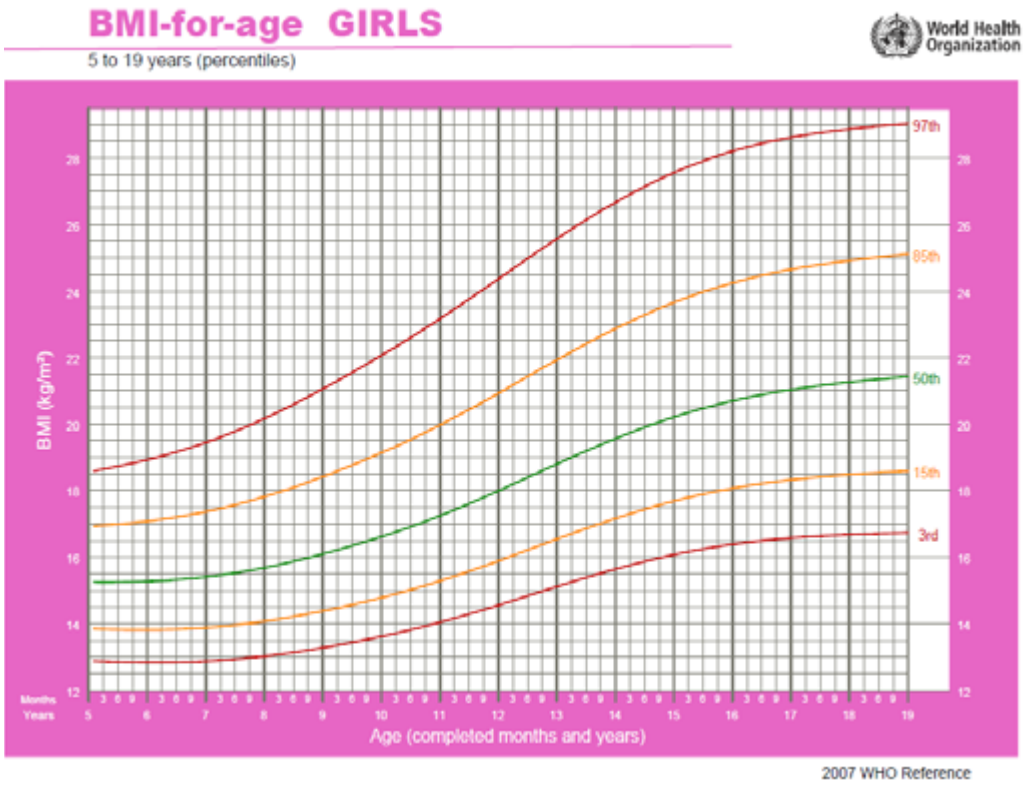


Fig.1. *Body mass index-for-age percentiles*

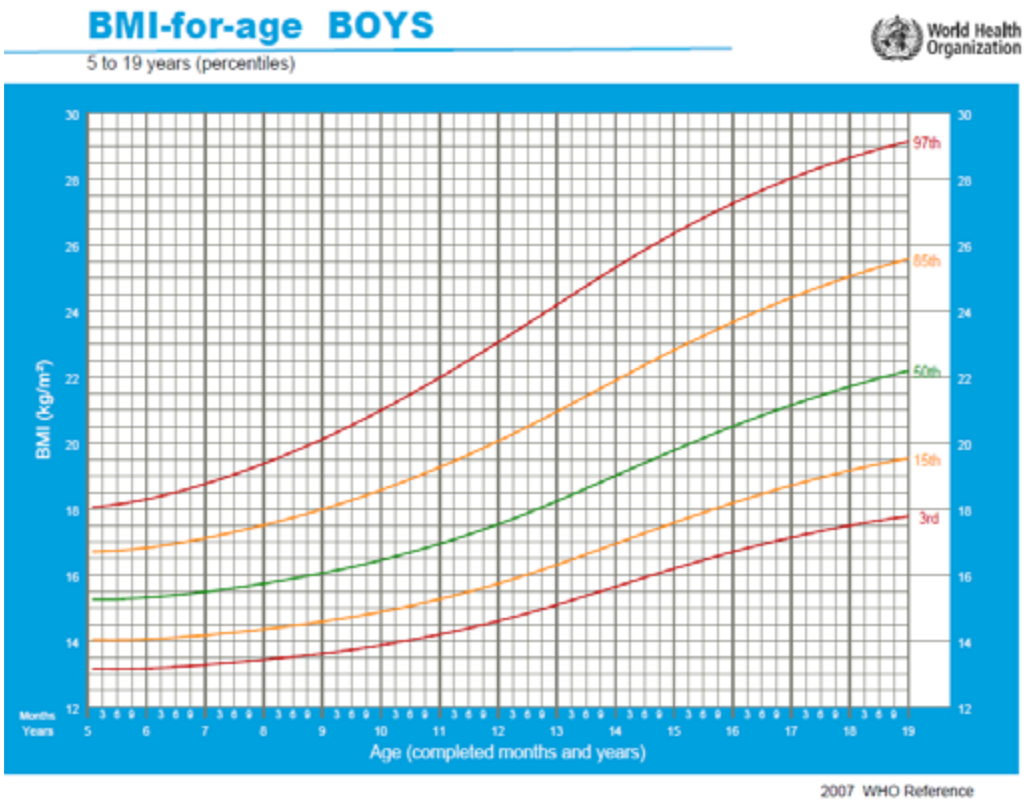


Table 1. *BMI-for-age weight status categories and the corresponding percentiles*

WEIGHT STATUS CATEGORY	PERCENTILE RANGE
Underweight	Less than the 5th percentile
Normal or Healthy Weight	5th percentile to less than the 85th percentile
Overweight	85th to less than the 95th percentile
Obese	Equal to or greater than the 95th percentile

Because weight and height change during growth and development, as does their relation to body fatness, a child's BMI must be interpreted relatively to other children of the same sex and age (Fig. 2) (CDC. About Child & Teen BMI, 2017).

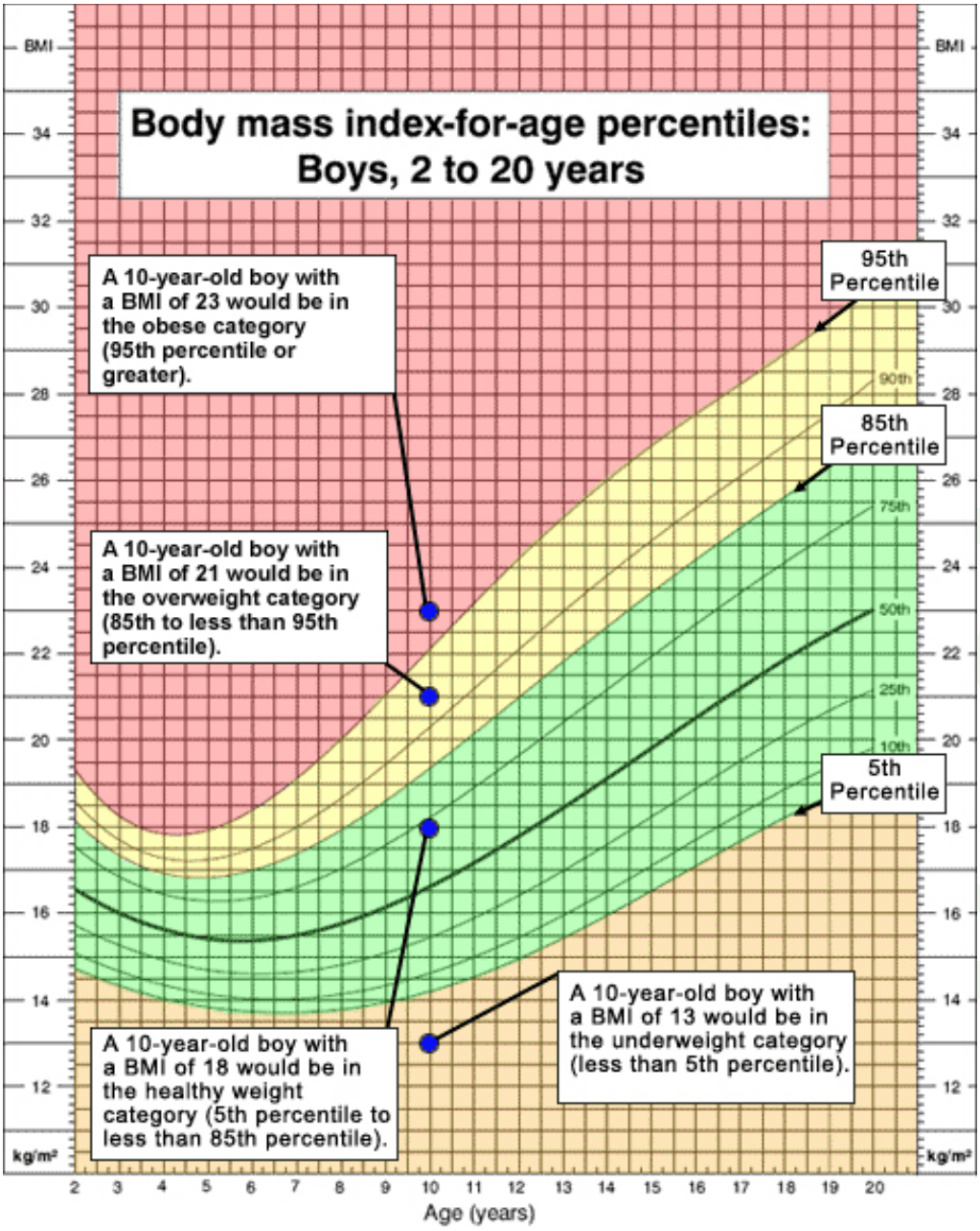


Fig. 2
An example of how sample BMI numbers would be interpreted for a 10-year-old boy *(CDC. About Child & Teen BMI, 2017)*

2.1.2 The role of schools

Promotion of healthy diets and physical activity in school is essential to fight the childhood obesity epidemic. Because children and adolescents spend a significant part of their young lives in school, school environment is an ideal setting to acquire knowledge and skills about healthy choices and to increase physical activity levels (WHO. School policy framework: implementation of the WHO global strategy on diet, physical activity and health, 2008).

Suggestions to promote physical activity in schools: increasing the number of physical education

classes and/or sports classes is one of the most direct policies to increase students' physical activity. Policy-makers are encouraged to ensure that:

- Physical education classes contribute to the overall daily physical activity of students throughout the school years;
- The majority of the physical education class time is actually spent on physical activity. This includes aerobic/endurance, strength, flexibility, and coordination activities;
- A variety and choice of physical education classes is offered so that each student's age, gender, and disability needs and interests are taken into consideration;
- Physical activity is enjoyable, developmentally appropriate, promotes fair play and encourages maximum participation of all students;
- Pupils learn about physical activity and health, and develop the confidence and skills for lifelong participation in physical activity;
- Physical education teachers are well-qualified and properly trained;
- Adequate safety precautions are established and enforced to prevent injuries and illnesses resulting from physical activity;
- The undertaking or withholding of physical activity is not used as punishment (WHO. School policy framework: implementation of the WHO global strategy on diet, physical activity and health, 2008).

Children and adolescents should do 60 minutes or more of physical activity each day, but no less than 3 days each week (CDC. How much physical activity do children need?, 2017). World Health Organisation recommends that children and youth aged 5–17 should daily accumulate at least 60 minutes of moderate - to vigorous-intensity physical activity. The concept of accumulation refers to meeting the goal of 60 minutes per day by performing activities in multiple shorter bouts spread throughout the day (e.g. 2 bouts of 30 minutes), then adding together the time spent during each of these bouts.

Many of activities fall under two or three different categories, making it possible for your child to engage in each type of activities: vigorous-intensity aerobic, muscle- and bone-strengthening activities. Some activities, such as cycling or basketball, can be done at either a moderate- or a vigorous-intensity, depending on your child's level of effort (Table 2).

TYPES	AGE GROUP	
	Children	Adolescents
MODERATE–INTENSITY AEROBIC	• active recreation such as hiking, skateboarding, rollerblading • bicycle riding • walking to school	• active recreation, such as canoeing, hiking, cross-country skiing, skateboarding, rollerblading • brisk walking • bicycle riding (stationary or road bike) • house and yard work such as sweeping or pushing a lawn mower • playing games that require catching and throwing, such as baseball, softball, basketball and volleyball
VIGOROUS –INTENSITY AEROBIC	• active games involving running and chasing, such as tag • bicycle riding • jumping rope • martial arts, such as karate • running • sports such as ice or field hockey, basketball, swimming, tennis or gymnastics	• active games involving running and chasing, such as flag football, soccer • bicycle riding • jumping rope • martial arts such as karate • running • sports such as tennis, ice or field hockey, basketball, swimming • vigorous dancing • aerobics • cheerleading or gymnastics

Table 2.
Type of physical activity (CDC. Aerobic, Muscle- and Bone-Strengthening: What Counts?, 2017)

MUSCLE-STRENGTHENING	• games such as tug of war • modified push-ups (with knees on the floor) • resistance exercises using body weight or resistance bands • rope or tree climbing • sit-ups • swinging on playground equipment/bars • gymnastics	• games such as tug of war • push-ups • resistance exercises with exercise bands, weight machines, hand-held weights • rock climbing • sit-ups • cheerleading or gymnastics
BONE-STRENGTHENING	• games such as hop-scotch • hopping, skipping, jumping • jumping rope • running • sports such as gymnastics, basketball, volleyball, tennis	• hopping, skipping, jumping • jumping rope • running • sports such as gymnastics, basketball, volleyball, tennis

Suggestions for the promotion of physical activity at home:

- Reduce non-active time (e.g. television viewing, computer);
- ●Encourage safe walking/cycling to school and to other social activities;
- Make physical activity part of the family's daily routine such as designating time for family walks or playing active games together;
- Ensure that the activity is age appropriate and provide protective equipment such as helmets, wrist pads, and knee pads (WHO. Global Strategy on Diet, Physical Activity and Health: The Role of Parents, 2017).

2.1.3 Nutritional standards for school food

Food served in schools should adhere to minimum nutrition standards based on national or regional dietary guidelines. The following are some general guidelines for healthy eating that, after adjusting for cultural specificities, could be considered for the development of national nutritional standards for schools:

- A nutritious diet should meet the nutrient and energy needs of students and be based on a variety of foods originating mainly from plant-based sources;
- A variety of vegetables, fruits, whole cereals, bread, grains, pasta, rice or potatoes should be eaten, preferably fresh (for fruit and vegetables) and locally produced, several times a day;
- Fat intake should be limited to not more than 30% of daily energy and most saturated fats should be replaced by unsaturated fats. Trans-fatty acids should be avoided;
- The consumption of sugar and salt should be limited while ensuring that all consumed salt is iodized;
- Sugary drinks and sweets should only be used within limited frequency, refined sugar used sparingly;
- Fish and low-fat meat should be served for preference;
- Food should be prepared in a safe, hygienic and healthy way. Steaming, baking, boiling or microwaving helps to reduce the amount of added fat (WHO. Global Strategy on Diet, Physical Activity and Health: The Role of Parents, 2017).

2.2 ANOREXIA AND LEARNING ACTIVITIES THAT CAN BE IMPLEMENTED IN THE CLASS

Although it is most common for eating disorders to develop during adolescence, young children can also be affected. Eating disorders are particularly dangerous for young children as disorders can escalate quickly as well as permanently stunt growth and development. They can be difficult to diagnose as children's body weight and nutrition requirements vary due to growth spurts. Research suggests 20–25 per cent of children affected by eating disorders are boys and there also may be a link between childhood obesity and developing an eating disorder as an adolescent or adult.

Regardless of age, eating disorders are about underlying emotions, not food. Changes in behaviour with food could signal that a child is experiencing emotional, social or developmental issues such as depression, teasing, bullying or abuse. Often an eating disorder develops as a way for a child to feel in control over what's happening in his/her life (Eating Disorders Victoria. Eating Disorders and Children, 2017).

Preventative measures. Children are influenced by parents and teachers who play an important role in modelling healthy and balanced attitudes towards food, exercise and body image (Eating Disorders Victoria. Eating Disorders and Children, 2017).

Some important guidelines for parents and teachers include:

- Try not to label foods as 'good' or 'bad' as this may lead to feelings of guilt and shame when 'bad' foods are eaten
- Avoid using food as bribes, punishment or rewards
- Avoid promoting unrealistic or perfectionist ideals in terms of your child's behaviour, grades and achievements, and encourage self-acceptance instead
- Encourage children to celebrate diversity, and not place too much value on physical appearance as a measure of value
- Accept that children are likely to have different eating habits from adults – they may require food more frequently during the day or go through periods of liking or disliking particular foods
- Children learn by example – do not skip meals, participate in fad diets or enforce diets upon children
- Encourage children to express their feelings freely and encourage open communication at home
- Allow your child to eat when they are hungry and stop when they are full – do force them to eat everything on their plate
- Model acceptance of different body shapes and sizes, including your own
- Do not criticize or tease children about their appearance or make comparisons to another child's appearance
- Encourage sport and regular exercise to foster their body confidence, model a healthy lifestyle yourself by participating in regular exercise for enjoyment and fitness
- Reassure your child that it is normal and healthy to gain weight at the onset of puberty and throughout adolescence
- Help children develop a critical awareness of the images and messages they receive from television, magazines, the internet and social media
- If you are concerned about a child restricting food groups or portion sizes, consult your general medical practitioner (Eating Disorders Victoria. Eating Disorders and Children, 2017).

2.2.1 The role of schools

Education about body image, disordered eating, risks of dieting and eating disorders is an important aspect of all school health and wellbeing programs. Having the correct information and education about eating disorders can help prevent an eating disorder from developing, ease the suffering of a person in the early stages of an eating disorder, and reduce the stigma and misconceptions that surround eating disorders. Efforts to promote positive body image and healthy lifestyle choices should be integrated into every school's teaching program as a general practice with the aim of proactively helping to prevent eating disorders from arising rather than simply responding reactively to existing issues.

Workforce Development:

- Train all relevant teaching staff in the early identification and referral of students with serious body image concerns and eating disorders;
- Provide all teachers with training and information about eating disorders, their impact on the wellbeing of young people and ways that risk factors are reinforced by social environments.

Engaging Parents:

- Make available up-to-date printed information about how parents can support their child to develop a positive body image and a healthy attitude towards food;
- Provide parents with links to information about body image and eating disorders on the school website;
- Present talks and information nights for parents about eating disorder issues.

2.2.2 How to recognize and respond to eating disorders?

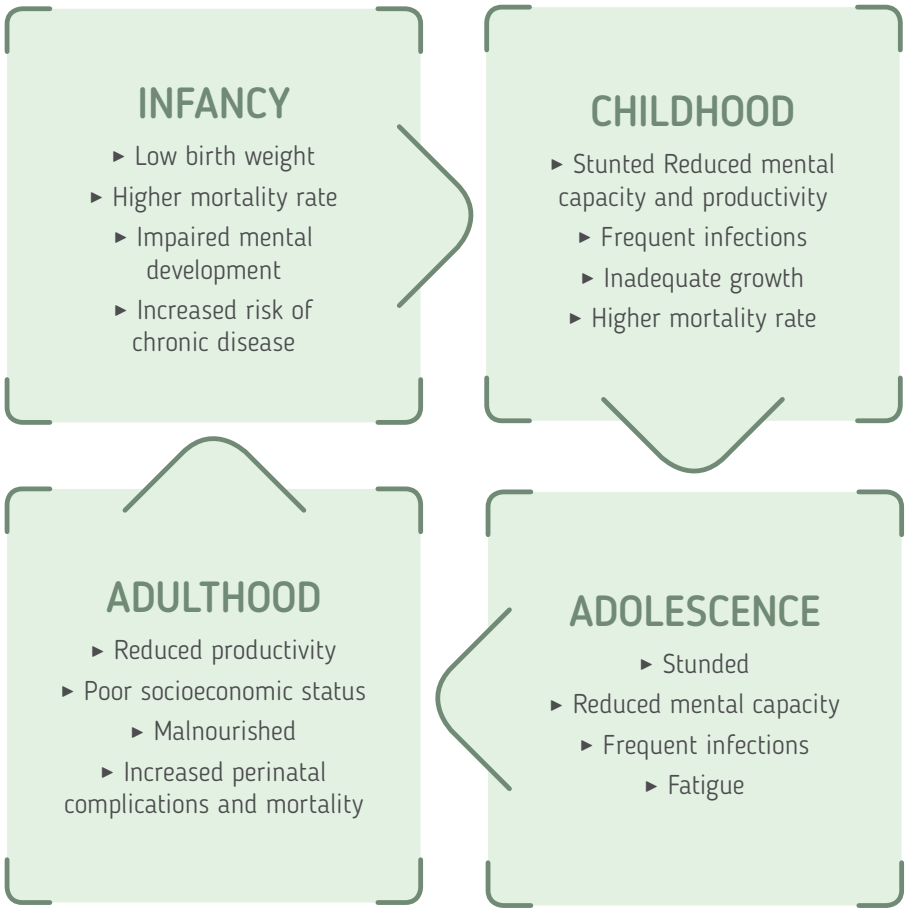
It is not easy to detect who may have an eating disorder as eating disorders cannot be identified by someone's size or shape. A person with an eating disorder may have disturbed eating behaviours coupled with extreme concerns about weight, shape, eating and body image. However, people with eating disorders may go to great lengths to hide, disguise or deny their behaviour, or may not recognize that there is anything wrong. This may make the characteristic behaviours of the illness difficult to identify and it is often very difficult for people with eating disorders to ask for help. Knowing who is has the highest risk of developing an eating disorder can help teachers know who will benefit most from preventative interventions.

2.3 AVITAMINOSIS

Micronutrient deficiencies (MND) have a direct impact on individuals and on societies, resulting in poorer health, lower educational attainment and decreased work capacity and earning potential (fig.2). Micronutrient is the umbrella term used to represent essential vitamins and minerals required from the diet to sustain virtually all normal cellular and molecular functions (West et al., 2012). While the required amounts of micronutrients are very small, MND can have wide-range

negative health impacts that will ultimately result in death if untreated. MND are common, affecting an estimated 2 billion people worldwide (Howson et al., 1998). Around the world, pregnant women and children under 5 years of age are at the highest risk of MND. Iron, iodine, folate, vitamin A, and zinc deficiencies are the most widespread MND and are common contributors to poor growth, intellectual impairment, perinatal complications, and increased risk of morbidity and mortality. Of greatest concern is the fact that the cycle of MND perpetuates across the generations with far reaching consequences on the future population (Bailey et al., 2015).

Figure. 2. *Influence of the micronutrient deficiencies*



Fat-soluble vitamin (A, D, E, and K) deficiencies

- Deficiency of Vitamin A is common in resource-limited countries (Harrison, 1993). It is associated with a group of ocular signs known as xerophthalmia. The earliest symptom is night blindness, which is followed by dryness of the conjunctiva and cornea. Progression of disease includes keratomalacia (softening), ulceration, perforation and scarring of the cornea; prolapse of the lens; and blindness. Other features of vitamin A deficiency include pruritus, growth retardation, and increased susceptibility to infection (Sommer, 1996; Morriss-Kay & Sokolova, 1996). Randomized trials have shown that routine vitamin A supplementation to children in endemic areas is associated with a reduction in diarrhea-related and possibly in all-cause mortality (Pazirandeh & Burns. Overview of vitamin A, 2017). There are two types

of Vitamin A: retinoid and carotenoid. Retinoid is the type of Vitamin A that is abundant in animal sourced foods especially in liver and other offal meat, while carotenoids are found in orange coloured and other vegetables with dark green leaves, for example, cantaloupe, carrot, melon and some vegetables such as spinach, sweet potato, apricots, broccoli with dark green leaves, even in eggs. Sources of vitamin A: liver, fish liver oil, butter, pumpkins, tomatoes, carrots and others (Arnarson. The Fat-Soluble Vitamins: A, D, E and K, 2017).

- Deficiency of Vitamin D, typically caused by dietary deficiency and inadequate exposure to sunlight, is associated with hypocalcemia, hypophosphatemia, and rickets of children. Defective bone growth is caused by a failure of mineralization of uncalcified osteoid and cartilage resulting in a wide irregular zone of poorly supported tissue and numerous characteristic skeletal abnormalities including:
  - Craniotabes, caused by thinning of the outer table of the skull;
  - Enlargement and delayed closure of the anterior fontanelle;
  - Frontal bossing of the skull;
  - Delayed eruption of the teeth and tooth enamel defects;
  - Beading of the ribs (rachitic rosary);
  - Scoliosis;
  - Exaggerated lordosis;
  - Bowlegs in older infants;
  - Greenstick fractures in the long bones.

Very few foods naturally contain vitamin D, so dermal synthesis is the major natural source of the vitamin. Vitamin D from the diet or dermal synthesis is biologically inactive and requires enzymatic conversion to active metabolites (Pazirandeh & Burns. Overview of vitamin D, 2017). Sources of vitamin D: Your body can produce all the vitamin D it needs as long as you regularly expose large parts of your skin to sunlight. Few foods naturally contain vitamin D. The best dietary sources are fatty fish and fish oil, but mushrooms that have been exposed to ultraviolet light may also contain significant amounts (Arnarson. The Fat-Soluble Vitamins: A, D, E and K, 2017).

- Tocopherol (Vitamin E) deficiency can be associated with a progressive sensory and motor

neuropathy, ataxia, retinal degeneration, and a hemolytic anemia. The form that is best known for its role in human health is alpha-tocopherol, which is abundant in olive and sunflower oils, and is the predominant form in the European diet (Pazirandeh & Burns. Overview of vitamin E, 2017). Sources of vitamin E: The richest dietary sources of vitamin E include certain vegetable oils, meat, eggs, seeds and nuts (Arnarson. The Fat-Soluble Vitamins: A, D, E and K, 2017).

- Deficiency of Vitamin K results in a bleeding diathesis. Bleeding may be seen in the skin, the gastrointestinal tract, genitourinary tract, gingiva, lungs, joints, or the central nervous system. Dietary vitamin K1 (phylloquinone or phytonadione) is found in green vegetables. Gut microflora synthesizes vitamin K2 (menaquinones, including menatetrenone), which provides a portion of the dietary requirement of vitamin K. Vitamin K2 has approximately 60 percent of the activity of vitamin K1, by weight, but bioavailability of both forms varies substantially depending on other intraluminal nutrients (Pazirandeh & Burns. Overview of vitamin K, 2017). Recommended dietary intake and adequate intake for fat-soluble vitamins see at the table 3. Sources of vitamin K: The best dietary sources of vitamin K1 (phylloquinone) are leafy green vegetables, whereas vitamin K2 (menaquinone) is mainly found in animal-sourced foods and fermented soy products (Arnarson. The Fat-Soluble Vitamins: A, D, E and K, 2017).

Table 3. *Recommended dietary intake (RDA) and adequate intake (AI) for fat-soluble vitamins (Bellows & Moore. Fat-Soluble Vitamins: A, D, E, and K, 2012)*

Life Stage Group	Vitamin A (mcg1/RAE)	Vitamin D (mcg2)	Vitamin E (mcg a-TE3)	Vitamin K (mcg)
Children				
1-3 y	300	15	6	30*
4-8 y	400	15	7	55*
Males				
9-13 y	600	15	11	60*
Females				
9-13 y	600	15	11	60*

1 As retinol activity equivalents (RAEs). 1 RAE = 1mcg retinol or 12 mcg beta-carotene.

2 As cholecalciferol (vitamin D3). 10 mcg cholecalciferol = 400 IU of Vitamin D.

3 As alpha-tocopherol equivalents. 1 mg of alpha-tocopherol = 1.5 IU of Vitamin E=22IU of d-alpha-tocopherol=33 IU of dl-alpha- tocopherol

**Indicates an Adequate Intake (AI). All other values are Recommended Dietary Allowance (RDA)*

WATER SOLUBLE VITAMIN DEFICIENCIES

Deficiencies of water-soluble vitamins are seen with protein-energy malnutrition (PEM) in resource-limited countries but are less common than are deficiencies of fat-soluble vitamins.

FOLATE – Folate deficiency is characterized by hyper segmentation of neutrophils, megaloblastosis and anemia. Folate deficiency can cause growth faltering, even in the absence of anemia. Low serum folate levels are also found among children with zinc and vitamin B12 deficiencies. Medications such as phenobarbital increase the need for folate. The World Health Organization (WHO)[4] recommends empiric treatment of all severely malnourished children with folate. It is also important to provide adequate amounts of zinc at the same time, as part of overall nutritional rehabilitation, because folic acid treatment can inhibit zinc absorption (Bellows & Moore. Water-Soluble Vitamins: B-Complex and Vitamin C, 2012). Sources of Folate. Sources of folate include liver, kidney, dark green leafy vegetables, meats, fish, whole grains, fortified grains and cereals, legumes, and citrus fruits. Not all whole grain products are fortified with folate. Check the nutrition label to see if folic acid has been added (Bellows & Moore. Water-Soluble Vitamins: B-Complex and Vitamin C, 2012).

THIAMINE – Thiamine (vitamin B1) deficiency is classically associated with beriberi, characterized by high output cardiomyopathy and polyneuritis. Infantile beriberi occurs in infants between one and four months of age who have protein-energy malnutrition, are receiving supplemented hyper alimentation fluid or boiled milk, or are breastfed by mothers who are deficient in thiamine. Infants with beriberi have a characteristic hoarseness or aphonic cry caused by laryngeal paralysis (Bellows & Moore. Water-Soluble Vitamins: B-Complex and Vitamin C, 2012). Sources of Thiamine: peas, pork, liver, and legumes. Most commonly, thiamin is found in whole grains and fortified grain products such as cereal, and enriched products like bread, pasta, rice, and tortillas (Bellows & Moore. Water-Soluble Vitamins: B-Complex and Vitamin C, 2012).

RIBOFLAVIN – Riboflavin (vitamin B2) deficiency is characterized classically by angular stomatitis, glossitis (magenta tongue), seborrheic dermatitis around the nose and scrotum, and vascularization of the cornea (Bellows & Moore. Water-Soluble Vitamins: B-Complex and Vitamin C, 2012).

Sources of Riboflavin. Sources include liver, eggs, dark green vegetables, legumes, whole and enriched grain products, and milk. Ultraviolet light is known to destroy riboflavin, which is why most milk is packaged in opaque containers rather than clear ones (Bellows & Moore. Water-Soluble Vitamins: B-Complex and Vitamin C, 2012).

NIACIN – Niacin (vitamin B3) deficiency results in pellagra with dermatitis, diarrhea, dementia, and weakness.

- the dermatitis is localized to sun-exposed areas of the body. The skin is dry, cracked, hyperkeratotic, and hyperpigmented.

4 http://www.who.int

- watery diarrhea, as well as colitis, may be pronounced. Vomiting also may occur.
- neurologic findings include peripheral neuropathy, irritability, headache, insomnia, loss of memory, emotional instability, toxic psychosis associated with delirium and catatonia, seizures, and coma.
- oral manifestations include cheilosis, angular fissures, atrophy of the tongue, hypertrophy of the fungiform papillae, and painful inflammation of the mouth, which may lead to refusal of food (Bellows & Moore. Water-Soluble Vitamins: B-Complex and Vitamin C, 2012).
- sources of Niacin. Sources include liver, fish, poultry, meat, peanuts, whole and enriched grain products (Bellows & Moore. Water-Soluble Vitamins: B-Complex and Vitamin C, 2012).

PYRIDOXINE – Pyridoxine (vitamin B6) deficiency manifests as nonspecific stomatitis, glossitis, cheilosis, irritability, confusion, weight loss, and depression. Peripheral neuropathy occurs in adolescents, whereas younger children develop encephalopathy with seizures (Bellows & Moore. Water-Soluble Vitamins: B-Complex and Vitamin C, 2012). Sources of Pyridoxine: sources include pork, meats, whole grains and cereals, legumes, and green, leafy vegetables (Bellows & Moore. Water-Soluble Vitamins: B-Complex and Vitamin C, 2012).

VITAMIN B12 – Vitamin B12 deficiency is uncommon among children but can occur in exclusively breastfed infants of mothers eating a strict vegetarian (vegan) diet, or with vitamin B12 malabsorption due to gastric bypass, short bowel syndrome, or pernicious anemia. In under-nourished children, subclinical vitamin B12 deficiency contributes to poor linear growth and weight gain. Overt deficiency may cause megaloblastic anemia, atrophic glossitis, neuropathy, and demyelination of the central nervous system. Infants may present with nonspecific symptoms, including weakness, failure to thrive, developmental delay, afebrile seizures, involuntary movements, nystagmus, tremors, and irritability. If untreated, irreversible cognitive deficits may occur. Vitamin B12 deficiency in an infant causes elevation of the acylcarnitines, propionylcarnitine (C3) and/or methylmalonylcarnitine (C4DC), which are often measured as part of a newborn screening program for methylmalonic acidemia. Thus, neonatal vitamin B12 deficiency due to maternal deficiency should be considered in the differential diagnosis of an infant with abnormal results on a newborn screening test (Bellows & Moore. Water-Soluble Vitamins: B-Complex and Vitamin C, 2012). Sources of vitamin B12: Vitamin B12 can only be found only in foods of animal origin such as meats, liver, kidney, fish, eggs, milk and milk products, oysters, shellfish. Some fortified foods may contain vitamin B12 (Bellows & Moore. Water-Soluble Vitamins: B-Complex and Vitamin C, 2012).

ASCORBIC ACID – Ascorbic acid (vitamin C) deficiency results in the clinical manifestations of scurvy. Overt clinical scurvy presents with hemorrhage (petechiae, ecchymoses, bleeding gums), follicular hyperkeratosis, hemolytic anemia, hypochondriasis, hysteria, depression, and fatigue. Infantile scurvy typically presents with irritability, pseudoparalysis because of painful extremities, failure to thrive, and gingival hemorrhage. The prominence of hair follicles on the thighs and buttocks and the eruption of coiled, fragmented hair with a characteristic corkscrew appearance are specific features of vitamin C deficiency. Petechiae found on the skin have a characteristic pale halo ring around a central erythematous core (Bellows & Moore. Water-Soluble Vitamins: B-Complex and Vitamin C, 2012).

For recommended dietary intake and adequate intake for water-soluble vitamins see Table 4.

Sources of Ascorbic acid: consuming vitamin C-rich foods is the best method to ensure an adequate intake of this vitamin. While many common plant foods contain vitamin C, the best sources are citrus fruits. For example, one orange, a kiwi fruit, 6 oz. of grapefruit juice or 1/3 cup of chopped sweet red pepper each supply enough vitamin C for one day (Bellows & Moore. Water-Soluble Vitamins: B-Complex and Vitamin C, 2012).

Life Stage Group	Thiamin B1 (mg/d)	Riboflavin B2 (mg/d)	Niacin B31 (mg/d)	Vitamin B6 (mg/d)	Folate (mcg/d)	Vitamin B12 (mcg/d)	Vitamin C (mg)
Children							
1–3 y	0.5	0.5	6	0.5	150	0.9	15
4–8 y	0.6	0.6	8	0.6	200	1.2	25
Males							
9–13 y	0.9	0.9	12	1.0	300	1.8	45
Females							
9–13 y	0.9	0.9	12	1.0	300	1.8	45

1 NE=Niacin Equivalents. 1mg of Niacin=60mg of tryptophan; 0-6mo=preformed niacin (not NE). (mg=milligrams, mcg=micrograms)

Table 4. *Recommended dietary intake and adequate intake for water-soluble vitamins (Bellows & Moore. Water-Soluble Vitamins: B-Complex and Vitamin C, 2012)*

DEFICIENCIES OF MINERALS

Children with protein-energy malnutrition (PEM) also may be deficient in minerals or trace elements.

CALCIUM – Calcium deficiency occurs in conjunction with deficiency of vitamin D or parathyroid hormone. Clinical manifestations of hypocalcemia include tetany, Chvostek sign, Trousseau sign, and seizures. Severe hypophosphatemia, (less than 1 mg/dL) can cause myopathy, rhabdomyolysis, bone pain, and osteomalacia or rickets. Hypomagnesemia typically is associated with hypocalcemia and hypokalemia and manifests with muscle fasciculations, tremors, or spasms, personality change, and seizures (Phillips & Jensen, 2017).

Sources of calcium. Low-fat dairy products, dark green leafy vegetables like broccoli and kale, tofu, most grains, and fortified food products such as milk alternatives (soy or almond milk), orange juice, and breakfast cereals (Bellows & Moore. Dietary Supplements: Vitamins and Minerals, 2013).

IRON – Iron deficiency anemia is the most common nutritional deficiency of children, and is particularly common in most of Africa, Latin America, and Southeast Asia. Severe iron deficiency anemia presents with lethargy, pallor, irritability, cardiomegaly, poor feeding, tachypnea, and impaired psychomotor and mental development. Spooning and pallor of the nail beds may be present on physical examination (Phillips & Jensen, 2017).

Sources of iron: animal sources include red meats, fish, oysters, and poultry. Plant sources include beans, spinach, fortified cereal and oatmeal, beans, and tofu (Bellows & Moore. Dietary Supplements: Vitamins and Minerals, 2013).

ZINC – Zinc deficiency was originally described in a group of children with low levels of zinc in their hair, poor appetite, diminished taste acuity, hypogonadism, and short stature. Now zinc deficiency is recognized to be associated also with numerous other findings, including alopecia, dermatitis, growth failure, cognitive dysfunction, and increased susceptibility to infection. Diarrhea can be both a cause of and a sign of zinc deficiency (Phillips & Jensen, 2017). Dermatitis associated with zinc deficiency classically occurs in the perioral and perianal areas of the body and is characterized by flaming red, easily denuded skin. Zinc supplementation is included in the oral rehydration solutions and refeeding solutions designed by the World Health Organization for treatment of severe malnutrition of children. Children with diarrhea should be treated with additional zinc supplements. A trial of zinc supplements is also appropriate as part of nutritional rehabilitation for children with milder degrees of malnutrition (Phillips & Jensen, 2017). Sources of Zinc: animal products such as red meat, poultry, seafood, and dairy products. Plant based sources include beans, nuts, whole grains, and fortified breakfast cereals (Bellows & Moore. Dietary Supplements: Vitamins and Minerals, 2013).

COPPER – Copper deficiency is associated with a sideroblastic anemia, neutropenia, failure to thrive, and skeletal abnormalities including osteoporosis, enlargement of costochondral cartilage, cupping and flaring of long bone metaphysis, and spontaneous fractures of the ribs (Phillips & Jensen, 2017). Sources of copper: legumes, nuts and seeds, whole grains, organ meats, drinking water (WebMD Health Corporation, 2017).

SELENIUM – Selenium deficiency can cause dilated cardiomyopathy with myocardial necrosis and fibrosis. Muscle pain, myopathy, loss of hair pigment, and nail bed changes also may occur (Phillips & Jensen, 2017). Sources of selenium: meats, seafood, grains (WebMD Health Corporation, 2017).

IODINE – Moderate iodine deficiency can lead to hyperplasia and hypertrophy of the thyroid gland or goiter to maintain a thyroid state. Severe dietary iodine deficiency results in hypothyroidism. Hypothyroidism during early critical periods of development can lead to permanent intellectual disability (mental retardation), hearing impairment, spastic diplegia, and strabismus. Clinical manifestations of congenital hypothyroidism include hypotonia, macroglossia, hoarseness, growth retardation, and constipation. The effects of iodine deficiency can be exacerbated by deficiencies of selenium and vitamin A and the ingestion of foods such as cassava or millet that contain goitrogenic substances

(Phillips & Jensen, 2017).

Sources of iodine: seafood, foods grown in iodine-rich soil, iodized salt, bread, dairy products (WebMD Health Corporation, 2017).

MAGNESIUM – Every cell in the body needs magnesium to produce energy. It helps make more than 300 different enzymes and send messages along the nerves. It even ensures the heart is healthy and beats regularly and regulates blood pressure (Baker, 2017).

Sources of magnesium: green leafy vegetables, whole grains and some legumes (Baker, 2017).

POTASSIUM. Potassium is the most abundant intracellular cation and is necessary for maintaining a normal charge difference between intracellular and extracellular environments. Potassium homeostasis is integral to normal cellular function and is tightly regulated by specific ion-exchange pumps, primarily by cellular, membrane-bound, sodium-potassium adenosine triphosphatase (ATPase) pumps. Derangements of potassium regulation may lead to neuromuscular, GI, and cardiac conduction abnormalities. Hypokalemia is generally defined as a serum potassium level of less than 3.5 mEq/L for children, although exact values for reference ranges of serum potassium are age-dependent, and vary among laboratories. It is frequently present in pediatric patients who are critically ill and reflects a total body deficiency of potassium or, more commonly, reflects conditions that promote the shift of extracellular potassium into the intracellular space (Verive, 2015). For recommended dietary intake for minerals see Table 5.

Sources of potassium: high potassium foods include beans, dark leafy greens, potatoes, squash, yogurt, fish, avocados, mushrooms, and bananas (Verive, 2015).

AGE	Calcium	Iron	Copper	Iodine	Magnesium	Potassium	Selenium	Zinc
	RDA mg	RDA mg	RDA mcg	RDA mcg	RDA mg	RDA g	RDA mcg	RDA mg
4-8	1000	10	440	90	130	3.8	30	5
9-13	1300	8	700	120	240	4.5	40	8

RDA - recommended dietary allowances
(mg=milligrams, mcg=micrograms, g=grams)

Table 5. *Recommended dietary intake for minerals (ConsumerLab.com, 2017)*

2.4 DIABETES (LEARNING ACTIVITIES THAT BE IMPLEMENTED IN THE CLASS)

Throughout the world, incidences of diabetes are on the rise, and consequently so is diabetes among children. Most children are affected by type 1 diabetes in childhood. Type 1 diabetes is an autoimmune disease that causes the insulin producing beta cells in the pancreas to be destroyed, preventing the body from being able to produce enough insulin to adequately regulate blood glucose levels. Type 1 diabetes may sometimes be referred to as juvenile diabetes, however, this term is generally regarded as outdated as, whilst it is commonly diagnosed for children, the condition can develop at any age. Insulin dependent diabetes is another term that may sometimes be used to describe type 1 diabetes. Because type 1 diabetes causes the loss of insulin production, it therefore requires regular insulin administration either by injection or by insulin pump (Diabetes.co.uk Community, 2017).

However, the number of children and young adults affected by type 2 diabetes is beginning to rise, particularly in America. As metabolic syndrome, obesity and bad diets spread, so too have the first incidences of type 2 diabetes. Type 2 diabetes mellitus is a metabolic disorder that results in hyperglycemia (high blood glucose levels) due to the body:

- Being ineffective at using the insulin it has produced; also known as insulin resistance and/or
- Being unable to produce enough insulin (Diabetes.co.uk Community, 2017).

Type 2 diabetes is characterized by the body being unable to metabolize glucose (a simple sugar). This leads to high levels of blood glucose which over time may damage the organs of the body. From this it can be understood that for someone with diabetes something that is food for ordinary people can become a sort of metabolic poison. This is why people with diabetes are advised to avoid sources of dietary sugar. The good news is for very many people with type 2 diabetes this is all they have to do to stay well. If you can keep your blood sugar lower by avoiding dietary sugar, it is likely you will never need a long-term medication (Diabetes.co.uk Community, 2017).

Type 2 diabetes was formerly known as non-insulin-dependent or adult-onset diabetes due to its occurrence mainly among people over 40. However, type 2 diabetes is now becoming more common among young adults, teens and children and accounts for roughly 90% of all diabete cases world-wide (Diabetes.co.uk Community, 2017).

2.4.1 What can parents of children with diabetes do?

Keeping a strict eye on the blood glucose levels of your child, avoiding lows and highs, can be a

large part of being a parent of a child with diabetes. Parents must be aware that children with diabetes have diet restrictions, and that their activity levels need to be closely monitored. Initially, and throughout the lifetime of the disease, diabetes can be a serious strain. Patients and their families alike should know that support is available.

Initially, the procedure for management and treatment of the disease can seem very complicated. Understanding how the disease affects your child, being adaptable and patient, are essential to successfully managing diabetes (Diabetes.co.uk Community, 2017).

Some things to bear in mind include:

- You may have to deliver insulin injections at first, and even if you do not need to then you should know how to. There are two major delivery sites, above the abdomen and in the thigh, but your healthcare team will elaborate.
- You should become familiar with the symptoms of low blood glucose, and also diabetic ketoacidosis. As well as recognizing these conditions, you should know what to do if they occur.
- Monitor your child's blood sugar levels, and as soon as they are old enough teach them how to do this by themselves. Similarly, as children become older they need to learn how to administer their own insulin injections.
- Make sure that people know your son or daughter is diabetic, and that they also know what to do if the symptoms of low blood glucose manifest themselves.
- Ensure that glucose is always available (Diabetes.co.uk Community, 2017).

2.4.2 Recommended target blood glucose level ranges

The NICE (National Institute for Clinical Excellence) recommended target blood glucose levels are stated below for adults with type 1 diabetes, type 2 diabetes and children with type 1 diabetes (Table 6).

Target Levels by Type	Upon waking	Before meals (pre-prandial)	At least 90 minutes after meals (post prandial)
Non-diabetic		4.0 to 5.9 mmol/L	under 7.8 mmol/L
Type 2 diabetes		4 to 7 mmol/L	under 8.5 mmol/L
Type 1 diabetes	5 to 7 mmol/L	4 to 7 mmol/L	5 to 9 mmol/L
Children type 1 diabetes	4 to 7 mmol/L	4 to 7 mmol/L	5 to 9 mmol/L

Table 6. *Recommended glucose levels in blood (Diabetes.co.uk Community, 2017)*

2.4.3 Blood sugar levels in diagnosing diabetes

The following table (No. 7) lays out criteria for diagnoses of diabetes and prediabetes.

Table 7. *Criteria for diagnoses of diabetes and prediabetes (Diabetes.co.uk Community, 2017)*

Plasma glucose test	Normal	Prediabetes	Diabetes
Random	Below 11.1 mmol/l Below 200 mg/dl	N/A	11.1 mmol/l or more 200 mg/dl or more
Fasting	Below 6.1 mmol/l Below 108 mg/dl	6.1 to 6.9 mmol/l 108 to 125 mg/dl	7.0 mmol/l or more 126 mg/dl or more
2 hour post-prandial	Below 7.8 mmol/l Below 140 mg/dl	7.8 to 11.0 mmol/l 140 to 199 mg/dl	11.1 mmol/l or more 200 mg/dl or more

Useful links:

Low Carb Program https://www.diabetes.co.uk/lowcarb/

7 Day low carb meal plan https://www.diabetes.co.uk/join/?seg=SEG_TYPE1&ref=sb

2.4.4 Management of children with diabetes in school setting

Diabetes management for children and adolescents requires multiple daily management tasks which can challenge caregivers. Nevertheless, the scientifically proven long-term health benefits of optimal diabetes control mandate the best efforts be made to manage diabetes at school as well as at home. Diabetes educators are ideally positioned to be involved in the process of educating school nurses and nonmedical school personnel about diabetes management, thus facilitating the student's diabetes care within the school environment. All school staff responsible for the student with diabetes must have a basic understanding of the disease, blood glucose goals, management tasks, and symptoms of hypoglycemia and hyperglycemia which may require intervention during school-related activities. School nurses are responsible for coordinating and overseeing medical management and safety during school hours and at all school-sponsored activities. 6 By adhering to diabetes standards of care and helping the school fulfil its responsibilities to provide care under applicable federal and state laws and regulations, they help to promote safety. Not all schools employ licensed nurses, despite the recommended school nurse:student ratio of 1:750. Even in schools which do employ a school nurse, there will be times when the nurse will be unavailable to personally provide care for the student with diabetes. A recent study comparing perceptions of parents of students with diabetes suggests that those in states allowing nursing delegation

of diabetes care tasks to trained non-medical personnel felt their children to be as safe as those in states that did not. Thus, a small group of school staff members must receive student-specific training from a qualified health care professional in routine and emergency diabetes care tasks, including checking blood glucose, administering insulin/medications, aiding in the treatment of mild to moderate hypoglycemia and giving glucagon for severe hypoglycemia (Cox et al., 2016).

Communication and collaboration between the school nurse, the student with diabetes, his/her family, the student's diabetes health care provider, and school personnel are essential to promoting the student's success and safety at school. Immediate goals include access to necessary care to maintain blood glucose levels within the student's target range and prevention of hypoglycemia and hyperglycemia so that less than optimal blood glucose control is not a barrier to achieving optimal school performance and attendance. Ongoing goals are normal growth and development, positive coping skills and avoidance of the chronic complications of diabetes (Cox et al., 2016).

ROLE OF THE DIABETES EDUCATORS

The diabetes educator serves as a consultant, educator, resource person, facilitator, and advocate to parents/guardian, the student with diabetes, the diabetes health care provider and school personnel. The diabetes educator can:

- be the primary contact and liaison between the school, parent/guardian, and diabetes health care team;
- be a resource for training and educating the school nurse and school personnel in the care of students with diabetes;
- educate and facilitate behaviour change of students with diabetes, parents/guardians, and school personnel; and
- provide resources and expertise to help develop, implement, and update the written school-based diabetes medical management plan (DMMP) (Cox et al., 2016).
- help determine the most appropriate meal-planning approach with regard to carbohydrate or calorie intake while at school based on child's eating patterns and insulin/and or oral diabetes medication plan - be it a flexible carbohydrate-counting approach or consistent carbohydrate approach at a specific meal or snack (Cox et al., 2016).

BEING ACTIVE

Physical activity is another integral part of the child and adolescent's diabetes treatment plan and a healthy lifestyle at school and at home. When facilitating school-based activity, the diabetes educator should recommend the following:

- physical activity in planning meal/snack times and medication dosages;
- understand the signs, symptoms, and treatment of exercise-induced hypoglycemia as well as the potential to avoid exercise induced hypoglycemia with insulin adjustments and pre-exercise carbohydrates;
- on-site accessibility of a fast-acting carbohydrate containing snack to treat hypoglycemia;
- designate times when physical activity should be delayed, avoided, or encouraged in the DMMP; and

- support school policy that enhances daily physical activity programs (Cox et al., 2016).

MONITORING

Regular monitoring of glucose is recommended for all children and adolescents with type 1 diabetes and many youth with type 2 diabetes during the school day. The diabetes educators' role in self-monitoring glycemic control may include the following:

- collaborate with student, family, and school personnel to promote access to blood glucose monitoring whenever and wherever necessary;
- provide or facilitate blood glucose monitoring training for the student, family, and school personnel;
- provide guidance for a regular monitoring schedule and indications for additional blood glucose checking and document in the DMMP;
- assist school personnel in their role and understanding of other monitoring modalities such as blood or urine ketone testing and continuous glucose monitoring (CGM) as appropriate and how to act on the results if needed;
- facilitate the purchase of adequate and appropriate monitoring supplies for glucose and ketones to meet monitoring needs;
- emphasize the importance of keeping an adequate number of diabetes supplies at school and provide a list if requested (Cox et al., 2016).

TAKING MEDICATION

Attaining individualized glycemic targets with minimal hypoglycemia requires mastery of key concepts in diabetes medications by youth with type 1 diabetes, many with type 2 diabetes as well as their caregivers. Using the following guidelines for medication management, the diabetes educator can help optimize glycemic control during the school day:

- assist the School Nurse or appropriate personnel in the implementation of the DMMP, clearly outlining the student's in-school medication plan and updating changes in a timely manner; including insulin to carbohydrate ratios (for children using flexible carbohydrate counting approach), correction dosing using a correction scale or formula, timing of medications, and meals;
- facilitate appropriate medication adjustments with input from the student, parents/guardians, and school nurse;
- educate students, parents/guardian, and school personnel about current diabetes medications and delivery systems; and
- collaborate with family and school nurses to periodically assess and optimize student's level of independence in diabetes medication administration (Cox et al., 2016).

PROBLEM SOLVING

Diabetes requires continual diligence to achieve optimal blood glucose target ranges. Managing hyperglycemia and hypoglycemia at school is essential to the learning process and academic success. Stress, illness, growth spurts and physical activity (e.g. physical education class, recess, field trips) can all impact blood glucose control on a day by day basis. Blood glucose excursions at school can

be an opportunity for the student to solve problems, helping promote a better understanding of the disease, and keeping the child safe in school. Diabetes educators can:

- provide the action plan and needed instruction for treatment for mild to severe hypoglycemia;
- suggest appropriate blood glucose action levels and an action plan with needed instruction for hyperglycemia (including prevention of diabetes ketoacidosis);
- support student access as needed to blood glucose meter, fluids, food, and/or the bathroom;
- assess for causes and patterns of blood glucose extremes and promptly re-evaluate the management plan in collaboration with the diabetes care team;
- communicate to school personnel the effect of hypoglycemia and hyperglycemia on cognitive performance;
- help plan ahead for diabetes management during special school situations such as standardized testing, field trips, parties, extracurricular activities and school emergencies;
- guide school staff and families as to when it is unsafe to keep the child at school due to diabetes-related problems; and
- teach family/caregivers about federal disability laws offering accommodation of diabetes care needs, support parents/guardian in advocating for adequate access to school nursing and other health services, and directing them to appropriate resources and organizations (Cox et al., 2016).

REDUCING RISKS

The most dangerous risk to the child with diabetes in school is severe hypoglycemia, which could potentially lead to seizure or death if not treated. Acutely elevated blood sugars can result in slowed cognitive processing, so students may not perform well in exams. Blood borne pathogens can be of concern and should be addressed. Chronic elevations in blood glucose can result in long term complications of diabetes and can be impacted by interventions at school.

To promote health, safety and academic success of the student with diabetes and school contacts, the diabetes educator can:

- assess the student's capability of performing diabetes tasks in a safe manner at school;
- coach student in safe practices when managing sharps at school;
- advocate for school attendance polices that allow students with diabetes adequate medical follow-up without penalty; and
- recommend standard vaccinations to include annual influenza vaccination and one-time pneumococcal vaccination for all students with diabetes (Cox et al., 2016).

In conclusion, this position statement supports the following:

- a medically safe school environment;
- self-management by students with diabetes when deemed appropriate;
- a healthy eating plan and physical activity;
- access to, accommodation, and a discrimination-free school experience for all school activities;

- written diabetes care plans for students with diabetes;
- advocacy for the training of nonmedical school personnel to administer glucagon and insulin/medications in the absence of the school nurse; and active participation of the diabetes educator in working with the school nurse and other school personnel to achieve these goals (Cox et al., 2016).

2.5 BLOOD PRESSURE

High blood pressure (hypertension) of children is blood pressure that is the same as or higher than 95 percent of children who are of the same sex, age and height as your child. There is no a simple target blood pressure reading that indicates high blood pressure in all ages for children, because what is considered a normal blood pressure changes as children grow. High blood pressure for children younger than 10 years old is usually caused by another medical condition. High blood pressure for children can also develop for the same reasons it does in adults — including being overweight, eating a poor diet and not exercising.

Lifestyle changes, such as eating a heart-healthy diet and exercising more, can help reduce high blood pressure of children. Yet, for some children, medications may be necessary (Mayo Clinic, 2017).

2.5.1 Symptoms. High blood pressure of children usually does not cause symptoms

When to see a doctor. Unless your child has an underlying health problem, you probably do not need to make a special visit to your child's doctor to have your child's blood pressure checked. However, your child's blood pressure should be checked during routine well-check appointments starting at age 3, and at every appointment if your child is found to have high blood pressure (Mayo Clinic, 2017). If your child has a condition that can increase the risk of high blood pressure — including premature birth, low birth weight, congenital heart disease and certain kidney problems — blood pressure checks may begin during infancy. If you're concerned about your child having a risk factor for high blood pressure, such as being overweight or obese, talk to your child's doctor (Mayo Clinic, 2017). Causes: high blood pressure in younger children is often related to other health conditions such as heart defects, kidney disease, genetic conditions or hormonal disorders. Concerning older children — especially those who are overweight — the precise cause of high blood pressure is often unknown (Mayo Clinic, 2017).

2.5.2 Primary (essential) hypertension

Essential hypertension is high blood pressure that occurs on its own, without an underlying condition. This type of high blood pressure occurs more often in older children and adolescents. The risk factors for developing essential hypertension are:

- Being overweight or obese (a body mass index over 25)
- A family history of high blood pressure
- Type 2 diabetes or a high fasting blood sugar level
- High cholesterol and triglycerides (Mayo Clinic, 2017)

2.5.3 Secondary hypertension

Secondary hypertension is high blood pressure caused by an underlying health condition. This is the type of high blood pressure that is more common among young children. Other health conditions that can cause high blood pressure include:

- Chronic kidney disease;
- Polycystic kidney disease;
- Heart problems, such as coarctation of the aorta;
- Adrenal disorders;
- Hyperthyroidism;
- Pheochromocytoma, a rare tumor in the adrenal gland;
- Narrowing of the artery to the kidney (renal artery stenosis);
- Sleep disorders, especially obstructive sleep apnea.

2.5.4 Complications

Children who have high blood pressure are likely to continue to have high blood pressure as adults unless they begin treatment. A common complication associated with high blood pressure of children is sleep apnea, a condition in which your child may snore or have abnormal breathing when he or she sleeps. Pay attention to breathing problems your child may have while sleeping. Children who have sleep-disordered breathing, such as sleep apnea, often have problems with high blood pressure — particularly children who are overweight (Mayo Clinic, 2017). If, as often happens, your child's high blood pressure persists into adulthood, your child could be at risk of:

- Stroke;
- Heart attack;
- Heart failure;
- Kidney disease.

2.5.5 Lifestyle and role of parents

High blood pressure is treated similarly for both children and adults, usually starting with lifestyle changes.

- Control your child's weight. If your child is overweight, losing the excess pounds or maintaining the same weight as he or she gets taller can lower blood pressure.
- Give your child a healthy diet. Encourage your child to eat a healthy breakfast that includes fiber and to avoid sugary cereals and beverages or products that have corn syrup solids listed as the first ingredient.
- Provide plenty of fresh fruits and vegetables in place of higher fat snacks like candy or chips. Trade white bread, rice and pasta for whole-wheat varieties. Working with a dietitian can be helpful.
- Decrease salt in your child's diet. Cutting the amount of salt in your child's diet will help lower his or her blood pressure. Children of ages 4 to 8 should not have more than 1200 mg a day, and older children should not have more than 1500 mg a day. Pay attention to how much salt you use in your cooking, take the saltshaker off the table. Avoid giving your child salty snacks, such as chips or pretzels. Pay attention to how much sodium is in canned and processed foods your child eats, such as soups and frozen dinners. Limit the amount of fast food your child eats. Fast-food restaurants generally have high-salt menus as well as high-calorie foods.
- Encourage physical activity. Most children need at least 30 to 60 minutes of physical activity a day. Limit your child's time in front of the television or computer — no television before age 2, and no more than two hours of "screen time" a day after age 2.
- Get the whole family involved. It may be hard for your child to make healthy lifestyle changes if you or your child's siblings do not eat a healthy diet or exercise. So, set a good example. Your whole family will benefit from eating a healthier diet. You can also join in the fun of riding your bikes together, playing catch or walking to the park as a family.
- Shop mindfully. Most of the time, your child can eat only the foods that you have purchased and made available. So, as the parent, bring healthy foods into your home and keep unhealthy foods out (Mayo Clinic, 2017).

In general, a lifestyle combining physical activity with food variety and social interaction is the best way to reduce the risk of developing chronic diseases (The GreenFacts Initiative, 2006).

3 EMOTIONAL ASPECTS OF HEALTHY NUTRITION

3.1 THE CULTURAL ASPECTS OF FOOD

From an object to satisfy basic needs of survival to an object related with pleasure, tradition and human health, food concepts have changed significantly through years and cultures. From globalization and fast hedonism, now we are entering the "slow" philosophy.

We know that there is no culture without food. Food functions as a way to give structure to daily life and to ritualistically mark the passages from one formal life stage (e.g., eating cake at a wedding) or informal life stage (e.g., drinking a nightcap before bedtime) to another (Nordström et al., 2018). One of the most important questions that is in the basis of forming the food culture of different nations and societies is what food is and what is not: cultural classification of what is edible is important. Humans are omnivores but use only a part of the potentially edible substances in nature. Ideas of what is edible may change between nations or between different classes in a society. Westerners' rejection of eating raw fish until recent years is one example. Another is Scandinavian farmers' traditional rejection of mushrooms as food, even though they were formerly served at banquets for the nobility (Nordström et al., 2018). Culturally the concept of food and eating goes through many aspects:

when we introduce healthy nutrition in schools we need to consider all these aspects and respect,

on the one hand, the different cultural and family traditions kids might have and, on the other, the importance of building an attitude towards food that would make kids be more aware of it and be prepared to make better informed choice related to nutrition throughout their whole life.

3.2 PSYCHOLOGICAL ASPECT OF FOOD

Psychologists, psychiatrists and other professionals have been trying to define personality for more than hundred years. Hippocratic theory is one of the oldest and still applied typologies of personality. This theory divides people into four basic types of temperaments (sanguine, choleric, phlegmatic, and melancholic) according to body fluids which prompt it. Some authors dealing with nutrition add a distinctive approach to food and eating to these types of classical temperaments. (Vesela & Grebenova, 2010)

Attitudes to food are shaped from an early age and are strongly influenced by many factors – environmental, social. However family plays the main role, as well as the child's individuality, which is given by temperament, conscious qualities, emotion and experience of the child with food. Throughout our life we meet and create a series of rituals associated with preparing and eating meals. And these rituals become a part of our personalities and traditions to pass to the next generations. For example, the ritual of tea drinking, use of bread and salt to welcome guest, or prayer before meals. Rituals are an essential part of holidays and important events of the year.

Psychological factors in eating relate also to emotions. Even if there is not a single unified definition of emotion we are sure emotions cause biochemical reactions in the body and when we relate food to emotions we can discover different patterns. Food calms us. We distract a baby with food or drink when it falls and hurts himself for example. Food could be a reward or a gift. Most social events in our life are associated with food. In these situations, the food is usually associated with positive emotions. It is quite normal that events such as infant baptism, wedding or birthday celebration are associated with good meals and drinks. But food also belongs to the less pleasant events in human life, e.g. treat mourners after the funeral etc. One turns to eat when he is happy to celebrate; when experiencing grief, searches for food that helps forget negative emotions. Food keeps our digestive system working and it does not allow us to think about what bothers us. Overeating is not the only way to solve our problems. Some people are trying to solve their problems by refusing food and denying hunger. In both cases there is a risk of severe psychosomatic problems. (Vesela & Grebenova, 2010)

Education in healthy nutrition must also respect emotional aspect of eating and help kids understand their emotions better and their relation to specific choices of food.

3.3 EMOTIONAL INFLUENCES ON FOOD CHOICES ACCORDING TO THE PARENTAL STYLE AND FEEDING PRACTICES

Since parents are the primary socialization agents of their children, it seems likely that aspects of parent behaviour may be related to emotional eating of children. General parenting styles describe how parents interact with their children (e.g., level of warmth, acceptance, and control) and specific feeding practices address what parents do to influence their children's eating behaviour (e.g., limiting sweets). Among children, emotional eating may be related to both general parenting style and specific feeding practices.

There are numbers of studies who explore these relations for example: among children aged 8–11, children who endorsed emotional eating tended to perceive their parents as "disregarding" and their relationship with their parents as "contradictory" (Schuetzman, Richter-Appelt, Schulte-Markwort, & Schimmelmann, 2008). Topham et al. (2011) found that parents who tended to minimize their children's negative emotions (e.g., "I tell my child not to make a big deal out of missing the party") were likely to have children who were engaging in emotional eating. Similarly, among Dutch adolescents, emotional eating was related to low maternal support, high psychological control, and high behavioural control (Snoek, Engels, Janssens, & Van Strien, 2007).

Even when parents may be well-intentioned, certain feeding practices may inadvertently promote childweight gain by removing the child's opportunity to learn to eat based on physical cues of hunger and satiety. For example, using food as a reward to shape a child's behaviour (e.g., offering a cookie if the child eats everything on the dinner plate) may decrease the child's ability to self-regulate his/her intake based on satiety and rely instead on external cues of when and what to eat (Birch, Birch, Marlin, & Kramer, 1982; Birch, McPhee, Shoba, Steinberg, & Krehbiel, 1987; Newman & Taylor, 1992). Furthermore, children whose parents offer food as an emotional regulation strategy may be prone to overeating. Results from an experimental study showed that children whose mothers offered food for emotion regulation consumed more cookies in a lab paradigm, as compared with children whose mothers did not apply emotional feeding practices (Blissett, Haycraft, & Farrow, 2010). In these circumstances, it is possible that children could learn to associate food with pleasure, potentially leading to an increased reliance on food as an emotion regulation strategy and a decreased tendency to eat based on nutritional needs. Similarly, overeating behaviour in mothers (e.g., binge eating and night eating) has been found to be significantly related to unhealthy eating patterns of children, including binge eating and night eating (Lamerz et al., 2005), (Braden, 2014).

3.4 EMOTIONAL EATING

3.4.1 Definition

Emotional eating is defined as overeating in order to relieve negative emotions. Thus, emotional eating is considered a maladaptive coping strategy. If an individual frequently engages in emotional eating, it can increase the risk of developing other eating disorders, like bulimia and anorexia nervosa. Research has also shown that the presence of an existing eating disorder increases the likelihood that an individual will engage in emotional eating. Given the relationship between serious eating disorders and emotional eating behaviour, it is important for clinical psychologists and nutritionists to recognize the signs of emotional eating and provide individuals with treatment. Since emotional eating is utilized to manage negative emotions, treatment necessitates learning healthy and more effective coping strategies. Emotional eating is a form of disordered eating and is defined as "an increase in food intake in response to negative emotions" and can be considered a maladaptive strategy used to cope with difficult feelings. More specifically, emotional eating would qualify as a form of emotion-focused coping, which attempts to minimize, regulate and prevent emotional distress. Interestingly, a study conducted by Bennett et al. found that emotional eating sometimes does not reduce emotional distress but instead enhances emotional distress by sparking feelings of intense guilt after an emotional eating session. Not only is emotional eating a poor way to cope, but those individuals who frequently utilize emotional eating to cope with social or psychological stressors are at an increased risk of developing eating disorders.

Emotional eaters are at an especially high risk of developing binge-eating disorder. 2.8% of Americans struggle with binge-eating disorder, which increases their risk of developing cardiovascular disease and high blood pressure. At the same time, the presence of other eating disorders increases the risk of an individual engaging in emotional eating. In a clinical setting, emotional eating disorders can be diagnosed by the Dutch Eating Behavior Questionnaire which contains a scale for restrained, emotional and external eating. Therapists may use positive psychology as a way to reduce the negative emotions that trigger emotional eating, reappraisal is often a complementary treatment with the primary treatment being focused on developing alternative coping strategies.

3.4.2 Major thesis

Current research suggests that certain individual factors may increase one's likelihood of using emotional eating as a coping strategy. The inadequate affect regulation theory posits that individuals engage in emotional eating because they believe overeating alleviates negative feelings. Escape

theory builds upon inadequate affect regulation theory by suggesting that people not only overeat to cope with negative emotions, but they find that overeating diverts their attention away from a stimuli that is threatening self-esteem to focus on a pleasurable stimuli like food. Restraint theory suggests that overeating as a result of negative emotions occurs among individuals who already restrain their eating. While these individuals typically limit what they eat, when they are faced with negative emotions they cope by engaging in emotional eating. Restraint theory supports the idea that individuals with other eating disorders are more likely to engage in emotional eating. Together these three theories suggest that an individual's aversion to negative emotions, particularly negative feelings that arise in response to a threat to the ego or intense self-awareness, increase the propensity for the individual to utilize emotional eating as a means of coping with this aversion.

The biological stress response may also contribute to the development of emotional eating tendencies. In a crisis, corticotrophin-releasing hormone (CRH) is secreted by the hypothalamus, suppressing appetite and triggering the release of glucocorticoids from the adrenal gland. These steroid hormones increase appetite and, unlike CRH, remain in the bloodstream for a prolonged period of time, often resulting in hyperphagia. Those who experience this biologically instigated increase in appetite during times of stress are therefore primed to rely on emotional eating as a coping mechanism.

3.4.3 Contributing factors

NEGATIVE AFFECT

Overall, high levels of the negative affect trait are related to emotional eating. Negative affectivity is a personality trait involving negative emotions and poor self-concept. It has been found that certain negative affect regulation scales predicted emotional eating. Additionally, a study conducted by Bennett et al. found that individuals engage in emotional eating only when they are experiencing negative emotions. More specifically, an inability to articulate and identify one's emotions made the individual feel inadequate at regulating negative affect and thus more likely to engage in emotional eating. A study conducted by Spoor et al. attempted to further delineate the relationship between negative affect and emotional eating. They found that negative affect was not significantly related to emotional eating when taking into consideration emotion focused coping and avoidance distraction behaviour. This suggests that negative affect is not independently related to emotional eating but is instead indirectly related through emotional coping and avoidance distraction behaviour. While Spence and Spoor's findings differed somewhat, they both suggest that negative affect does play a role in emotional eating but it may be accounted for by other variables.

RELATED DISORDERS

Emotional eating itself may be a precursor to developing eating disorders such as binge eating or bulimia nervosa. The relationship between emotional eating and other disorders is largely due to

the fact that emotional eating and these disorders share key characteristics. More specifically, they are both related to emotion focused coping, maladaptive coping strategies, and a strong aversion to negative feelings and stimuli. It is important to note that the causal direction has not been definitively established, meaning that while emotional eating is considered a precursor to these eating disorders, it may be also be the consequence of these disorders. The latter hypothesis that emotional eating happens in response to another eating disorder is supported by research that has shown emotional eating to be more common among individuals already suffering from bulimia nervosa.

BIOLOGICAL AND ENVIRONMENTAL FACTORS

Individual differences in the physiological stress response may also contribute to the development of emotional eating habits. Those whose adrenal glands naturally secrete larger quantities of glucocorticoids in response to a stressor are more inclined toward hyperphagia, which can serve as a physiological catalyst for emotional eating. Additionally, those whose bodies require more time to clear the bloodstream of excess glucocorticoids are similarly predisposed. These biological factors can interact with environmental elements to further trigger hyperphagia, namely, the type of stressor the individual is subjected to. Frequent intermittent stressors trigger repeated, sporadic releases of glucocorticoids broken up by intervals too short to allow for a complete return to baseline levels, leading to increased appetite. Those, whose lifestyles or careers entail frequent intermittent stressors, have greater biological incentive to develop patterns of emotional eating.

3.5 EMOTIONAL EATING IN CHILDHOOD

Psychological stress has been suggested to change dietary pattern towards more unhealthy choices and as such to contribute to overweight and emotional eating behaviour could be an underlying mediating mechanism. The interrelationship between stress, emotional eating behaviour and dietary patterns among young children has only rarely been examined. Nevertheless, research of children is pivotal as ***the foundations of dietary habits are established starting from childhood and may track into adulthood.*** According to the Children's Body composition and Stress study, stress of 437 children was measured by questionnaires on stressful events, emotions (happy, angry, sad, anxious) and problems (emotional, peer, conduct and hyperactivity). Data were collected on children's emotional eating behaviour and also on dietary patterns: frequency of fatty foods, sweet foods, snacks (fat and sweet), fruit and vegetables. Stressful events, negative emotions and problems were positively associated with emotional eating. Positive associations were observed between problems and both sweet and fatty foods consumption. Negative associations were observed between events and fruit and vegetables consumption. Overall, stress was associated with emotional eating and an unhealthier

dietary pattern and could thus contribute to the development of overweight, also for children. Nevertheless, emotional eating behaviour was not observed to mediate the stress – diet relation.

3.5.1 Childhood Obesity and Emotional Eating

Currently, an estimated 1 billion people – that is a little over 1 in 7 – are overweight, and at least 300 million of them are classified as clinically obese, the World Health Organization (WHO) reported. Decades of monitoring the weight of the world clearly show the number of overweight and obese people is rising fast and the crisis is as severe in many parts of the world among children and adolescents ages of 2-19 as it is among adults. "Childhood obesity is already epidemic in some areas and on the rise in others," the WHO reported. "An estimated 22 million children under 5 are estimated to be overweight worldwide." The Obesity Society notes on its website that obese children are at much greater risk than other children of Type 2 diabetes, hypertension, sleep apnea and orthopedic problems. They also are more likely to be obese as adults, thus increasing the risk of a number of diseases, including stroke, cardiovascular disease and some cancers. Besides the adverse effects on physical health, childhood overweight and obesity can cause emotional and psychological scars. These children and adolescents frequently endure years of social isolation, teasing, bullying and ridicule among their peers, as well as poor self-image, depression and other emotional and psychological problems that can affect their entire lives.

SOME CURIOSITIES ABOUT CHILDHOOD OBESITY AND EMOTIONAL EATING

- Overweight adolescents have a 70% chance of becoming overweight or obese adults.
- The number of overweight children has more than tripled over the past three decades.
- Studies show nearly 34 percent of children and teens in America are either overweight or at risk of becoming overweight.
- Research has shown parents are often their children's most important role models. If children see caregivers enjoying healthy foods and being physically active, they are more likely to do the same.

3.5.2 Shifting Away From Emotional Eating

Researchers, along with many weight-loss specialists and health professionals, believe today's weight-control programs neglect the No. 1 cause of overeating and obesity: emotional eating, which is typical of a majority of overweight and obese children and adults alike, is the unchecked habit of using food to cope with our feelings.

"Experts now agree that about 75% of overeating is caused by emotional eating, which means that a lot of us are using food to cope with our feelings," observes the HeartMath (HeartMath Institute

has researched and developed reliable, scientifically based tools to help people bridge the connection between their hearts and minds, and deepen their connection with the hearts of others) book, Stopping Emotional Eating. In today's high-stress society, many of us, adults and children, eat high fat or high sugar foods to soothe our emotions or temporarily relieve our stress and anxiety. Researchers at HMI believe that stress and negative emotions are major contributing factors to emotional eating and the medical community concurs with this assessment.

5 TIPS FOR HELPING CHILDREN WITH SELF-REGULATION TO MAINTAIN A HEALTHY WEIGHT

Researchers say that with the guidance of parents or adult care-takers children can be just as capable as adults in learning to monitor and self-regulate stress and emotions and improving their health, academic performance, social lives and overall well-being. In order to help children with self-regulation to maintain a healthy weight, these tips can be useful:

1. Guide children in learning to recognize and articulate what it is they are feeling. it's important to understand what triggers provoke excessive eating;
2. Help your children learn and apply emotion self-regulation techniques – to bring the emotions into balance;
3. Encourage and demonstrate attitudes of appreciation and forgiveness – help children find balance between not caring and perfectionism in the things they do;
4. Limit sedentary time to a combined total of two hours for watching tv, video games and non-school-related web surfing;
5. Set an example for children with good nutrition choices and habits and plenty of outdoor physical activity.

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METHODOLOGICAL AND PEDAGOGICAL FRAMEWORK FOR INTRODUCING HEALTH NUTRITION EDUCATION

II PART

This part is targeted mainly at teachers (and any educational practitioners) and those who are interested in applying a nutrition education strategy and designing pedagogically meaningful activities to encourage the adoption of healthy eating habits from an early age.

When it comes to developing a nutrition education strategy, it is easy to overlook the needs and interests of students, teachers and the school as a whole. However, multimodality lies at the heart of the nutrition program - catering to the different learning styles of the students through the use of a variety of teaching techniques that effectively and in an enjoyable manner help students to acquire nutritional knowledge and develop healthy eating habits for life. These techniques are based on pedagogical constructivism that manifests itself in active, playful and collaborative learning experiences for students.

1 KEY PEDAGOGICAL AND METHODOLOGICAL CONSIDERATIONS

1.1 INTRODUCTION

Appropriate methodology is important when a researcher / educational practitioners take on a new project. In this case, the idea is to use open methodologies that allow hands on activities and that are flexible enough to adapt to very different learning contexts. Therefore, **the chosen methodology was a combination of learning based on projects and cooperative learning.** There are many important coincidences between them; for example, the fact that both methodologies are open and stimulate student curiosity, experimentation and the development of strategies to face the difficulties that may appear in the learning process. On the other hand, the age of children is also a crucial pedagogical and methodological consideration, both in terms of cognitive development, vocabulary and logic. This approach to the teaching and learning process is based on a constructivist model intended to train critical individuals who are able to face society's challenges::

> The main purpose of education is to create individuals, who are capable of doing new things, not just repeating what other generations did, individuals who are creative, inventive and discovering.

The second objective is to develop critical minds capable of verifying things instead of just accepting them. Today's dangers hide in slogans, collective opinions, and mainstream thinking. We must be able to stand up

individually, to criticise, and to distinguish between what has already been proved and what has not yet been confirmed. Therefore, we need students who are active, who learn to research for themselves at an early age based on their own spontaneous activity and partly through the materials we present to them (Piaget, 1964, cited in Siegel and Brainerd, 1978).

Cooperative Learning cannot be developed without an ultimate aim. It is impossible to work at random, as all efforts need to be geared towards the fulfilment of a jointly built aim. **In the Project-based Method, the goal is to develop a process that also leads to a specific individual or group aim.** Whichever the case, the aim is the finished project, which must include all the necessary steps for its attainment. In fact, in both cases it is about:

1. *A tour to a problem-topic that fosters analysis, interpretation and criticism (as a way of comparing points of view).* This problem-topic may arise from a situation suggested by a student in the classroom, or it may be suggested by the teacher. In both cases, what it may lead to should include a valuable question worth exploring.
2. *A cooperative attitude prevails and the teacher is a learner, not an expert (as he/she helps to learn about subjects to be studied together with students).* (...) This is a change of attitude on the part of the adult.
3. *A journey that seeks to establish connections between phenomena, and questions the idea of a single version of reality.* (...)
4. *Each pathway is unique, and different types of information are used.*
5. *The teacher teaches to listen: we can also learn from what others say.* (...) As a result, students do not only take responsibility for what they say; they also take into account others as facilitators of their own learning.
6. *What we want to teach them we can teach in different learning ways (and we do not know if they will learn that particular thing or other things)* (...) Students learn in different ways (...) some establish relationships with some aspects addressed in class while other students find connections to different contents.
7. *An updated approach to the problems of disciplines and knowledge.*
8. *A way of learning that takes into account that all learners can learn if they find the right place for it.* All students can find their role.
9. *Learning linked to doing, to manual activity and intuition is also a way of learning.* (...) Submitting a project involves recovering a number of skills that our culture tends to underestimate, but undoubtedly, such skills provide students with new strategies and possibilities to respond to needs they will be faced with in their lives (Hernández, 2000).

These two methodologies (Cooperative Learning and Problem-based Learning) not only complement each other, iIn combination, they also offer substantial improvements in the teaching-learning process (the whole is more than the addition of the parts).

The search for this synergistic effect has prompted the use of both techniques at the same time. Finally, the aim is to obtain the advantages offered by cooperative group work: peer learning, permanent negotiation, socialisation of all students, sharing objectives and resources, and the need for an organisation... together

with those of a project-based methodology that favours curiosity, discovery, work planning and, in some cases, multidisciplinary on the basis of the interests of the group members.

1.2 COOPERATIVE LEARNING

1.2.1 Definition

Cooperation consists in working together to achieve common goals. "It is not only a methodological and potentially effective alternative to teaching, but a didactic structure with the ability to articulate procedures, attitudes and values in a democratic society that aims to recognise and respect human diversity" (Torrego and Negro, 2012). In a cooperative situation, individuals seek to obtain results that are beneficial to themselves and to all other members in the group.

> Cooperative Learning is the didactic use of small groups in which students work together to maximise their own learning and that of others.

New knowledge is formed from the person's own schemas -the product of his/her reality- and their comparison with those of other individuals around them. Cooperative Learning requires making an effort that influences many different outcomes at the same time. Hence its great capacity to generate divergent, creative and socialising answers, which enriches the educational event.

It is more than a grouping of people, since it is necessary to integrate isolated individuals who share physical spaces and generic objectives. In addition, its members must play functional roles, establish fruitful communication, and pool efforts to reach optimum results.

In fact, learning is defined by finding the way in which individual and group performance can be fully effective in proposing and reinforcing cooperation, which -as we will see later- is a system for achieving educational results that would otherwise be impossible to obtain.

Cooperative learning began to spread in the US as from the 19th century, but it was not until the

20th century with philosopher John Dewey[5] (1859-1952) that a methodological project of instruction was developed promoting the use of collaborative learning groups. This changed the conception of individual subjects, who were to become an organ in society. This new approach required the individual to be prepared for the purpose of contributing. Dewey revolutionised education and introduced experience as part of it, the social dimension becoming prominent. He laid the foundations for the creation of an active school, and underlined the importance of cooperation versus individualism, creativity versus passivity, and manual work versus courses. Another important aspect is that of textbooks: he conferred them with an enquiry function only.

Howard Gardner (1943-2011) also built a theory, that of multiple intelligences. According to him, intelligence is not a unitary entity but a sum of different intelligences, eight in total, with features and evolution of their own.

Cooperative Project Learning experts agree on the basic conditions for learning by cooperating and securing knowledge, so that learning can be built upon a solid and meaningful basis.

1.2.2 Goals

Several authors have defined the nature of the goals of Cooperative Learning. Here are some examples, as well as the conditions that are supposed to be basic in this type of learning:

1. In cooperative ***learning*** teams, the first objective is obvious: all members make progress in their learning; at the end of each teaching unit and at the end of the academic year, they should all know more than they knew at the beginning, based on their ability; the goal is not for everyone to learn the same thing, but for each person to progress as much as they can in their learning.
2. And in ***cooperative*** learning teams, the second objective is equally clear: to help each other, to cooperate, to make progress in learning (Pujolàs, 2012).

AT PRESENT, THE FIVE BASIC CONDITIONS THAT CHARACTERISE AND SUSTAIN COOPERATIVE LEARNING CAN BE WORDED AS FOLLOWS:

1. Positive interdependence among participants;
2. Personal responsibility and individual performance;
3. Promoting interaction;
4. Social skills;
5. Regular evaluation.

(Echeita, 2012).

In addition to positive interdependence and positive or promoting interaction, the emphasis is

5 https://www.iep.utm.edu/dewey

placed on each group member being responsible for achieving optimum results. If a practice that goes back to other similar educational experiences does not exist, the task can be fairly complex, requiring a longer time for each activity. Therefore, adaptation to social/group behaviour is necessary, as learning will take place through the application of some interpersonal practices. In any case, evaluation will be an important factor that will help students and teachers to take up -partially at the beginning and jointly later- the results of the work done in a cooperative way.

As is clear from the above, improvisation is not possible, although some random factors may be important. It is necessary, therefore, to start out from a structure, that is to say, from of a set of activities that pursue an end and are socially organised.

The activities and the purpose are related to the implementation and support of positive interdependence. We must think about the heterogeneity of students in the classroom and their total inclusion in learning. Each individual student learns differently.

1.2.3 Strategies

As for the strategies that will help the implementation of the cooperative project, they will be based on those that ensure some form of interdependence among students. For that reason, they will be generally aimed at: "Celebrating the success of each person and of the group as if it were personal" (Echeita, 2012).

Teamwork can be considered a content to be taught. According to Pujolàs compiled in Torrego and Negro (2012), these strategies should be highlighted as:

- Group cohesion;
- Progress of all parties in the learning;
- Group self-regulation;
- Continuous self-assessment;
- Definition of conflicts;
- Use of information and communication technologies (ICTs) to record the cooperative learning.

The group dynamics has the following characteristics:

- Work will be developed in small groups in which the students learn from each other through peer interaction. Team members should be aware that their performance depends on everyone's effort.
- The group objective of maximising the learning of all motivates the members to strive and to obtain results that surpass the individual capacity of each one of them. If one fails, all fail.
- Each member of the group is accountable and the rest of the group is responsible for common goals.
- Work is done together with the aim of producing overall results. Support is mutual, help is

offered, things are explained, etc.

- Some forms of interpersonal relationship are used, such as the distribution of tasks and responsibilities, to coordinate the work and achieve the objectives.

(Johnson, Johnson and Holubec, 1994, cited by Borrás and Gómez, 2010).

As is clear from these premises, cooperative learning is more than a methodological alternative, since it is potentially effective in teaching and it also creates a space in which the attitudes and values of a democratic society that recognises and respects human diversity can be articulated.

1.2.4 Evaluation

Group evaluation is fundamental. It must be based on a study of student features prior to establishing any assessment criteria. Therefore, the following should be considered, in general:

- Previous knowledge at the starting point of the chosen topic, both theoretically and practically (motivation, interests, etc.).
- Students' level of cooperation in relation to their developmental stage.
- Characteristics of the various personalities: introversion, extroversion, group leadership, etc.
- Specific skills that can be adapted to their educational needs.

In the group assessment, it is also very important to follow up any significant incidence using ICTs, to have a complete view of the progress made, doubts, setbacks, interventions, leadership ... as work is being done.

1.3 PROJECT-BASED LEARNING

1.3.1 Definition

According to Katz, cited in Clark (2006), a project is a deep enquiry carried out by the student about a subject worthy of his/her time, attention and energy. This rather simplified definition should be broadened for a better understanding.

As Clark (2006) points out, a project includes three phases:

a. The students together with their teacher choose and discuss a topic to explore.
b. In the next step students do direct research and then they organise and arrange their findings.
c. The project comes to an end with a series of questions and answers and with the sharing of their research.

In part, this division of sequences stems from Dewey (1958), who argued that education consists of organising and reconstructing experience. In this way, for him, the acquisition of knowledge is done as a personal rediscovery.

The Project-based Method considers a view of education in which students become more and more responsible for their learning when they apply, in real projects, the skills and knowledge acquired in the classroom. This methodology is largely based on socio-constructivism according to which learning is generated from our previous knowledge, so learning is meaningful insofar as it leans on an existing substratum. Authors such as Lev Vygotsky (Vygotsky, 1987) reinforce this idea by associating it with group learning, arguing that students learn more quickly cooperatively than individually.

> This approach envisages collaboration not only between students but also between students and their teachers, which creates a dynamics in which all participants benefit from the learning process.

This is an essential step ahead, since participants are more likely to develop their autonomy and learning ability to the fullest, which encourages a range of psychological responses that favour curiosity and creativity.

The term *project* was not applied more generally until Kilpatrick published his essay *The Project Method* in 1918 (Kilpatrick, 1918). For him, projects were defined by four phases: proposing, planning, executing, judging.

Dewey, Kilpatrick's teacher, criticised his pupil's project and the method fell into disuse. After many vicissitudes, however, in the early 20th century the method was recovered and implemented in countries like Canada, Argentina, the UK, Germany, India, and Australia. Interestingly, Russia became a main player in this field, as the methodology was deemed an alternative to capitalist teaching as of the 1920s. In the 1930s, project-based learning came to be considered the only truly Marxist and democratic means of teaching. It lasted for a decade until after World War II.

In the 1960s, the Project-based Method spread throughout Europe, updating the system that Kilpatrick and Dewey had previously devised.

1.3.2 Goals

According to Clark (2006), when undertaking a project, in addition to the three phases of the pro-

ject, three aspects need to be considered: (1) content, (2) processes, and (3) products:
Work projects are a way of understanding schooling as based on education to be able to understand things, which implies that students participate in a research process that is meaningful to them (not because it is easy or they like it) and in which they use different study strategies; they can participate in the planning of their own learning, and it helps them be flexible, recognise the "other" and understand their own personal and cultural environment. This attitude favours the interpretation of reality, oriented towards the establishment of relationships between the lives of students and teachers and the knowledge that disciplines and non-disciplinary knowledge produce. All this fosters the development of strategies of enquiry, interpretation and presentation of the process followed when studying a topic or a problem which, by its complexity, favours self-knowledge in students and teachers and their knowledge of the world they live in[6].

1.3.3 Strategies

It therefore follows that this method can be defined as:

1. A set of attractive learning experiences that engage students in complex, real-world projects through which they develop and apply skills and knowledge.
2. A strategy that acknowledges that meaningful learning leads students to an inherent learning process, an ability to do relevant work, and the need to be taken seriously.
3. A process in which curriculum results can be easily identified, but in which the results of the students' learning process are not predetermined or completely predictable.
4. This learning requires students to handle many sources of information and disciplines that are necessary to solve problems or answer questions that are really relevant.
5. The project-based method is a learning strategy that focuses on core concepts and principles in a discipline, engages students in problem solving and other meaningful tasks, allows them to work autonomously to build their own learning, and culminates in results generated by themselves.
6. Working with projects can change the relationships between teachers and students.
7. It can also reduce competition among students and allow students to collaborate, rather than work against each other. In addition, projects can change the focus of learning, shifting from simple memorisation to the exploration of ideas[7].

According Clark (Clark, 2006) the learning process of students includes the following stages:

(1) Developing their own research questions
(2) making predictions about possible answers
(3) devising ways to test hypotheses
(4) reaching agreement with the teacher about different ways of representing their findings
(5) taking the time to solve their own problems by trial and error

6 Excerpted on 15-10-13 from http://www.eumed.net/rev/ced/26/arsv2.htm
7 Excerpted on 15-10-13 from http://elmetododе.blogspot.com.es/2012/12/que-es-el-metodo-de- proyectos.html

The phases developed by Clark are considered the ideal within learning stages, but they do not always coincide with reality at the classroom:

"The approach that inspires projects is linked to the perspective of globalised and relational knowledge [...] This modality of articulating school knowledge is a way of organising the teaching and learning activity in which knowledge is not dictated and then understood in a rigid way, or on the basis of pre-established disciplinary references or student homogenisation. The function of the project is to favour strategies for the organisation of school knowledge in relation to: 1) information treatment and 2) the relationship between the different contents around problems or hypotheses that help students build their knowledge and transform information from different disciplinary knowledge sources into knowledge of their own" (Hernández and Ventura, 2006).

As is the case with Cooperative Learning, in this situation it is also essential to discover the structure that will guide the contents of the work, with logical and sequential successions and in any case acting as a link to other subjects.

It is about giving meaning to meaningful learning by taking its articulation -based on open foresight- as its basic principle. Therefore, there is an evident need to give a strong meaning to the functionality of what is to be learned and also to the value of memorisation, reinforcing what has been learned while other learning relationships are identified.

The information needed to build the projects is not predetermined, nor does it depend on the teacher or a textbook; instead, it is based on what each student already knows about a subject and the information that can be related to it in school and outside school. Conversely, it is necessary to approach the information presented in class in such a way that students get to organise it and value it, inferring from it new meanings or references.

So, in this system, it is the class who chooses the subject, always taking into account the teacher's proposals, as the teacher must state the reasons that determine the choice of the work to be done and provide the applicable situations. Thus, he/she will specify the connecting thread of the activity and the choice of materials to be used in the work with elements such as structure, rhythm, etc. These materials will be sought and chosen by all the parties, ensuring that they help achieve certain goals. It will also be important to consider whether the relationship between the subject and the materials will be appropriate to ensuring that they contribute something to each student and to the project system. And, finally, the result must be an original experience, based on the concepts that were to be developed in this case.

In this respect, the teacher should be patient and insist on the restructuring, rethinking or modification of the elements of the project, as not all students have the same expressive, rhythmic or auditory ability to follow those more musically gifted. It is therefore imperative for all students to intervene; the environment needs to be impregnated with emotion, to make participants want to communicate and make a common effort.

The procedures help students incorporate new learning strategies which, being included in the process of construction of the project, can be used in the specific case that is developed or on other occasions:

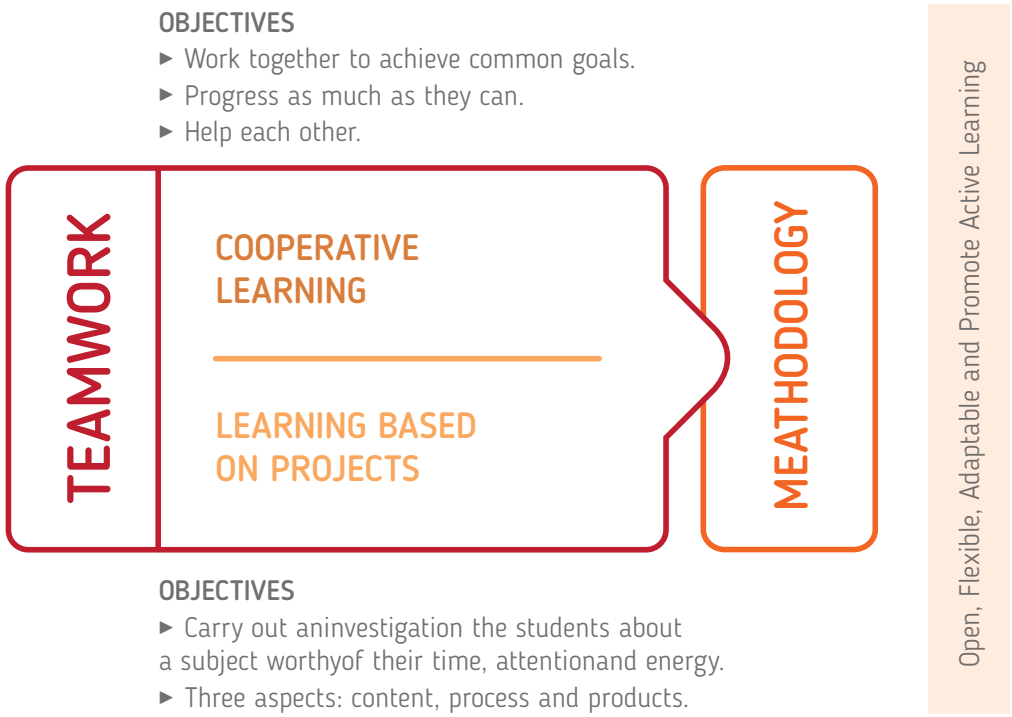
1.3.4 Evaluation

As far as the evaluation is concerned, it is justified by the analysis of the process followed throughout the sequence and of the interrelationships created in the learning. Therefore, decisions must be anticipated, relationships must be established, and new questions must be inferred.

As the *Buck Institute for Education* notes, "two types of evaluation are important in the project-based method: The evaluation of students' results and the evaluation of the effectiveness of the project in general"[8].

In the first case, attention must be paid to results as well as student self-evaluation. In the second case and since students are generally the best critics of their project, their opinion should be considered. Therefore, upon project completion, it is important to reflect about the success or failure of the project. Self-assessment should be a further element of the learning process; it will be very useful to note down which things worked and which did not in order to reorganise new strategies and actions for subsequent activities.

Figure 3. *Methodological framework.*



8 Excerpted on 16-10-13 from http://es.slideshare.net/norman.trujillo/el-mtodo-de-proyectos-como-tcnica-didctica.

1.4 BASIC SKILLS DEVELOPMENT

The idiosyncrasy of cooperative work makes a number of core skills develop simply by using this methodology:

- Linguistic communication: oral and written expression is required to convey the intended learning. Use of adequate terminology and a basic vocabulary that must be used fluently.
- Treatment of information: it is essential to make good use of information sources as well as filtering them adequately. In this skill, it is essential to know and use ICTs (information and communication technology) properly.
- Social and citizen competence: the fact of working in a group implies continuous interaction with the members of the group. There is a ongoing exchange of opinions and criteria, and it is essential to reach agreement for all parties to be satisfied.
- Cultural and artistic skills: quite often, this type of work ends in a product that requires an artistic ability to develop it creatively and conveniently.
- Learning to learn: the autonomy of the group is fundamental, the teacher being a companion or a guide. This means that students are immersed in a process in which they are largely responsible for their own learning.
- Autonomy and personal initiative: although apparently contradictory, personal initiative in each member of the group is essential for the group to make progress. It is about making the most of the potential of each person to maximise their efforts and have optimum results.

The remaining core skills are developed to a greater or lesser extent depending on the learning contents. In the next figure are presented all the core skills.

Figure 4.
Basic competences.
ICT: *information and communication technology*

2 A FOCUS ON THE PEDAGOGICAL TECHNIQUES WITHIN THE HEALTHEDU FRAMEWORK

2.1 INTRODUCTION

The terms “method” and “teaching” techniques are often confused. A method of teaching is the medium or media through which the teacher seeks to achieve the objectives of his teaching. The methodology of teaching essentially refers to the philosophy that governs teaching and learning activities and does not concern specific tactics.

On the other hand, the term "teaching techniques" refers to more specific behavioural patterns or specific activities that are perfectly compatible with the teaching methodology of the teacher and facilitate the achievement of his / her goals. We could say that they are specific strategic tools that include "systems of rules and actions, ways of work, thoughts, attitudes and attitudes concerning both the teacher and the student" (Bikos & Birbilis, 2004). Thus, the teaching methodology relates to the teacher's theoretical background and teaching principles, which determine the type of interaction and the relationship between the educational, the learner and the cognitive object, the educational techniques are more related to how the methodological theory is realized in practice.

The choice of the teaching method undoubtedly plays a decisive role in the learning process as it determines the way the child learns, while for each activity it is usually a combination of methods

and techniques. It goes without saying that the choice of teaching techniques and their method of implementation will, and need to, vary depending on the age and cognitive development of the students.

Here follows some modern techniques that, with appropriate adaptation, can be applied to nutrition education:

Teaching techniques/pedagogical practices
Storytelling
Role-playing
Educational games
Brainstorming sessions and discussions
Working in groups
Enhanced lectures
Demonstrations/Visits/ Guest lectures-learning from experts

Further, these techniques are further explained; links to theoretical foundations, learning benefits and key considerations when applied in the class are also made.

2.2 STORYTELLING

> *"The story-teller takes what he tells from experience – his own or that of others. And he in turns makes it the experience of those who are listening to his tale"*
>
> *Walter Benjamin (cited in Bauman, 1986, p.2)*

Fairy tales provide an interesting and constructive context in which young students use their linguistic and motor skills holistically in activities that simulate learning in real life situations and in which children can use their creative talents. The approach to the use of fairy tales as a teaching

tool creates an imaginary world in the classroom in which children pretend to be characters of the story while working in small groups in activities designed by the teacher based on the content of the course.

The use of "story-telling" as a learning and teaching tool has greatly arouses the educational community's interest (Mott et al, 1999) as significant learning outcomes can readily occur when the storytelling technique is applied in thoughtful and reflective ways (Clandinin and Connelly, 1998; McDrury and, 2002; McEwan and Egan, 1995).

The integration of meaningful storytelling activities in an educational setting can encourage "reflective dialogue", "foster collaborative endeavour", "nurture the spirit of inquiry", and "contribute to the construction of new knowledge" (Alterio, n.d, n.p). When storytelling (either in digital or traditional form) is used in a meaningful way and as "a robust mode of inquiry" (Alterio, n.d, n.p), the learning benefits for students are multiple. Offering students the opportunity to be the creators of their stories allows them to go deeper in the meaning- making procedure.

2.2.1 The educational value of the fairy tales/stories

Children are fascinated with fairy tales. When the narrator provides enough time to think about it, to get into the spirit of the story it makes them listen with care and encourages them to talk about it - then it is obvious that the fairy tale offers a lot of emotional and intellectual perspectives. **The purpose of the fairy tale is to warm up and stimulate the imagination of the child, to cultivate their language and critical thinking, to help children express their needs and feelings through movement and play (Papanikolaou & Tsilimeni, 1992)**. Fairy tales entertain the child, while at the same time illuminate and cultivate the development of their personality. In order to maintain the interest of the child in the fairy tale, they must not purely be amused and have their curiosity stimulated, but their lives are to be enriched, it must spur their imagination, help them develop meaning and clarity of feelings (Bettelheim, 1995).

> Fairy tales contribute to the creation of stable relationships between children and the surrounding natural environment, with its rich reference to the world of birds, animals, forest, trees. Through the fairy tales, children are given the opportunity to express themselves with their speech and body, to express their thoughts and concerns, to extort their feelings, to show their inclinations and talents.

Each child draws a different meaning from the same tale depending on the interests and needs of the moment. Tales enrich the child's life and give it a magical dimension - they offer aesthetic pleasure, joy and thrill, for the adventures of the hero and the

enchanting places. Tales offer the greatest joy to children. They develop fantasy and emotion. They even introduce the children to the world of moral conscience.

Stories of fairy tales are precious for acquiring and preserving the interest of children, giving them the opportunity to see learning from a different perspective, as a fun process. Young children are more motivated to learn because they are perfectly comfortable to respond with enthusiasm to new experiences and techniques of repetition, imitation, etc. Young children like to experiment with new experiences and new knowledge, are more open to new experiences and have less established ideas (Griva & Semoglou, 2012).

Through fairy tales they have the opportunity to express themselves, to take on roles, to socialize, to respect their group and rules, to combat phobias and inhibitions, to develop communicative skills and abilities, to understand the language of images and symbols, to enjoy the fairy tale while freely indulging in their imagination. Through games designed based on the story of a fairy tale, children play and entertain, socialize and learn, provided the teacher has a clear educational objective from the beginning of learning, as ambiguity can create anxiety (Fisher, 2005).

Numerous studies have demonstrated the need to teach fairy tales in **pre-school and primary school**. The influence of the fairy tale is proven, in addition to cognitive development, especially in the emotional and social development of children, moral repertoire as well as in the development of their creative and critical thinking (studies by Anagnostopoulos, 1997. Avdikos, 1999. Malaphantis, 2011 Merakles, 2012. Bettelheim, 1976, 1995). As the internationally recognized Swiss scholar Max Lüthi argues, "the fairy tale is partly entertainment, partly pedagogy, but in its totality it is the mirror of human existence and the potential of man".

Taking into consideration all of the above, it is no wonder then that fairy tales, and often traditional fairy tale, are recommended as a tool for the development of educational content and activities - that go beyond nutritional issues and include cultural, environmental and sensorial aspects as well - to not only transfer knowledge, but also to promote healthy nutritional habits and behaviour, both in formal and informal educational settings. In addition to promoting healthy habits and behaviour, developing fairy tales with targeted health messages can, amongst other things, also increase children's willingness to taste healthy foods and expose children to new food experiences. The fairy tale provides the children with a non-threatening context in which to have new experiences, to take calculated risks and to make choice they would not normally make because of both conscious and subconscious preconceived ideas or dislike they may have of a particular food.

Fairy tales are also a practical method to reach parents through child-driven health education in the home. Children take their newly acquired and enthusiasm home and may even place expectations on their parents and their family to follow certain healthy nutritional habits that they had learnt about at school, and as such, the entire family benefits.

2.3 ROLE-PLAYING

Role-play refers to activities where students simulate a scenario by assuming specific roles. As a teaching technique, it attempts to personalize knowledge, the basic concepts of which are role and identity. In the classroom, students can work through a situation and practice behaviour for the real world. Alternatively, the role-playing activities may be used to shed light on any complicated topics. This means that students play a role and try to imagine what they would do as a particular person or in a particular situation.

To be effective, students must take on the roles that they are assigned and assume the vantage point of a specific character. Depending on the role, they may actually play themselves in a particular situation or play the role of a certain character - where students are given roles that require them to behave in a way that they would not normally conduct themselves. However, even in the latter case, each pupil's personality interacts with the character they must undertake (and with which they must identify). So, in the best case, they will understand the problem through their own experience.

Role-play is a type of simulation activity that allows students to be creative in the classroom. Although role-play could be viewed as a type of problem-based learning, it is distinctive in that students act out the given scenario in "real time". Students must relate to each other in order to work through the situation. They play roles associated with a given situation and, through the experience, aim to understand more deeply both the situation and their reactions to it. Role playing and simulation allows the student to process an issue through someone else's actions and to solve problems with the help of the group. It is usually used to achieve emotional and social goals, as children, through role play, interpret ways of behaving and responding to various actions and decisions in order to deepen their understanding through experience. Students either play role-play-related roles or act as critical viewers while the role of the teacher is to animate and guide.

In particular, during the course of a role play activity children as "actors":

- Explore their feelings and express them in a safe context
- Understand the perspective of the others, putting themselves in the other characters' shoes
- Analyze social situations through dynamic interaction
- Look at problems and find solutions through the development of arguments

But also as "spectators", children are trained to pay attention, to "experience" emotional situations from a safe distance but also identify with the "actors", comment on and process the situation under consideration.

It is important to point out that it is appropriate for children to change roles throughout the session in order to have the opportunity to look at the problem from all sides and thus better understand

the different perspectives.

Role playing is one of the techniques a teacher can use to ensure the involvement of all children during the learning process. In role play, children enter a "theatrical situation," which provides the opportunity to "play" and "experience" real day-to-day situations in a sheltered educational environment in which testing, mistakes and practice are allowed. The technique of role playing involves educational benefits that aim to improve and develop the desired behaviours and competencies that are dealt with in the educational program - this is achieved through the feedback provided to the "actors" after playing it, feedback which is provided by the fellow learners, the teacher and by themselves (Kokkos, 1998: 205).

There are three main steps that are highly recommended to ensure full benefit is gained from the use of role playing as an educational tool:

1. **Briefing students:** Explaining the topic and establishing the situation in understandable terms for each student
2. **Conducting the drama/role-playing:** Behaving as an actor in the described situation
3. **Debriefing:** Analyzing how the roles were played and identifying what concepts were learned

Figure 5.
Three core stages in Role Playing

By following these steps and incorporating all the three stages into the role play session, the students will be much better prepared, both mentally and psychologically, to take on or play their assigned role. They will also be more receptive to analysing the behaviour, reactions and feelings of their themselves or their character (Orlich, et al 2010).

As role playing is a process-oriented group technique in which students act out or simulate a real-life situation, it may involve almost any number of participants - although seven to ten is ideal. When role play is introduced as a teaching technique for the first time, students will also need some coaching to use the technique effectively - thorough preparation will help students enjoy the process and experience of role playing. Role playing is a versatile technique that can be used with students of all grade levels and all levels of academic achievement, and it can be used to investigate almost any situation or topic (Orlich, et al 2010).

In **Nutrition Education**, role-playing has many advantages as an educational technique, including **building thoughts, facilitating flexible thinking, promoting awareness, and providing opportunities to practice food-related behaviour**. Role-play is an excellent technique for teaching nutrition to the young child. Role playing nutrition enables children to conceptualize various foods, think flexibly about them, be aware of their nutritive content and practice food-related behaviours.

2.4 EDUCATIONAL GAMES

Educational games are games explicitly designed with educational purposes, or which have incidental or secondary educational value – games that are designed to help people to learn about certain subjects, expand concepts, reinforce development, understand an historical event or culture, or assist them in learning a skill as they play. They satisfy our fundamental need to learn by providing enjoyment, passionate involvement, structure, motivation, ego gratification, adrenaline, creativity, social interaction and emotion in the game itself while the learning takes place (Prensky). The main characteristic of an educational game is the fact that game elements and learning content coexists and enforce one another (Pivec et al, 2003). Usually a game has a set of routines, rules and actions that the player should perform and learn in order to be successful.

Research shows that educational games can motivate learners, nurture self-confidence and self-esteem in some learners, and support learners in developing a set of skills useful in their adult life.

So which are the educational **benefits of utilizing games in learning environment?**

- Learners' reflection upon their learning can be encouraged (Oberhofer 1999 cited in de Freitas et al, 2006)
- Games help break down barriers and encourage better interactions between the learners in the group.
- Games can simplify complex abstract ideas and theories
- Their use can help the development of basic skills (Kambouri et al. 2003, cited in de Freitas et al, 2006), social skills (Sutcliffe 2002, cited in de Freitas et al, 2006), ICT skills (Mellar et al. 2001, cited in de Freitas et al, 2006), and critical thinking skills (Jiwa and Lavelle 2002, cited in de Freitas et al, 2006)
- Playing educational games also help us and children with focus as they need to be patient while waiting to achieve getting to the next level.
- Children's self-esteem is boosted through games because of the often quicker reaction from the game system where they can really see how they have accomplished something.

There is the claim that, "games do a similar job to persuasive speaking and debating, which seeks to influence the beliefs and behaviour of people. So like listening to a persuasive argument, a game persuades the player to carry out specific actions within the game itself" (Williamson, 2009). The same opinion is also expressed by Pivec et al (2003) who also brings into stage the importance of the cycle within the game. Pivec says: "The game should be motivating, so the learner repeats cycles within a game context. While repeating e.g. playing a game, the learner is expected to elicit desirable behaviours based on emotional or cognitive reactions which result from interaction with and feedback from game play". Thus games, due to their persuasive and motivational nature, can have a positive impact on children's thinking and can set a basis whereupon certain attitudes and

behaviours can be established.

The article "Serious Games for Serious Topics" by Clark Quinn at *eLearn Magazine* studies the fact that educational games create a **hands-on, minds-on opportunity** that allows players to actively focus, create and change a scenario while simultaneously learning about consequences of choice in the situation. As students become more engaged and committed to succeeding in the game, they become more willing to learn about the scenario the situation is taking place in. They begin to care about learning more about the topic and how to solve the problem. As the article points outs, "It's the difference between watching a nature documentary and going backpacking in the wilderness." (Quinn, 2008). Rather than just memorizing new material like you would watching a documentary, serious games allow students to become active participants in discovering new ideas, information and solutions to problems while also allowing them to feel the tension and suspense of the crisis.

1. Games are a form of **fun.** That gives us ***enjoyment and pleasure***
2. Games are form of **play**. That gives us ***intense and passionate involvement.***
3. Games have **rules.** That gives us ***structure.***
4. Games have **goals.** That gives us ***motivation.***
5. Games are **interactive.** That gives us ***doing.***
6. Games are **adaptive.** That gives us ***flow.***
7. Games have **outcomes and feedback.** That gives us ***learning.***
8. Games have **win states.** That gives us ***ego gratification.***
9. Games have **conflict/competition/challenge/opposition.** That gives us ***adrenaline.***
10. Games have **problem solving.** That sparks our ***creativity.***
11. Games have **interaction.** That gives us ***social groups.***
12. Games have **representation and story.** That gives us ***emotion.*** (Prensky. 2001)

In terms of **motivation**, it is argued that games are intrinsically motivating; players are motivated to play regardless of the consequences of the learning activity (Malone & Lepper, 1987). This is related to one fundamental characteristic of a game: **the fact that it has no perceived utility for the player**. Games are played because they provide a multitude of **emotions**, such as fear, surprise, pride, relief, etc. and have other motivational aspects such as challenge and fantasy. Given this intrinsic motivation to play, several educational games have been developed, including all the games considered as "edutainment". **In terms of pedagogy**, the active nature of games encourages learner-cantered pedagogy. As described by Rieber (1996), play is a natural learning strategy for children.

In conclusion, important learning and motivational mechanisms can be triggered when children's natural motivation to play games meets a game scenario that has been thoroughly designed to facilitate educational purposes. In Presnky's (2001) own words: "Play has a deep biological, evolutionarily important, function, which has to do specifically with learning". Especially in the field of **pre-school education**, games can become a great medium of learning and teaching. More specifically, the game provides the opportunity for repetition and learning opportunity through trial and error. At the same time, children develop the concept of causal relationships through the game, the power

to distinguish differences, to analyse and to compose, to imagine and to formalize. Also, in the game, children create, analyse and expand the skills of scientific exploration and understanding of concepts. In other words, the game can be a useful tool in the hands of the teacher in order to achieve his teaching objectives and support the development of skills (such as: setting goals, rules, problem solving, interaction, collaboration and more).

2.5 BRAINSTORMING SESSIONS AND DISCUSSIONS

Brainstorming is a simple and effective skill-building technique to use when a high level of creativity is desired. The entire class can participate in a brainstorming activity, but the shorter the time available for discussion, the smaller should be the number of participants.

The leader begins the brainstorming session by briefly stating the problem under consideration. The problem may be as simple as "What topics would the group like to consider this semester?" or as complex as "How can the school lunchroom be arranged to maximize efficiency?".

After the topic has been stated and before interaction starts, it is crucial to select a method for recording the discussion. It can be taped, or one or two students who write quickly can serve as recorders. The leader should stress to the group that *all* ideas need to be expressed and to produce free, spontaneous expression of ideas. It encourages them to express themselves quickly, spontaneously, one after the other, in the form of a "storm". All group participants need to realize that achieving the highest possible *quantity* of suggestions is paramount. It does not matter if they know the subject. They are asked to contribute to the examination of the question with any idea that comes to mind, even if it seems fanciful or unrealistic (Kokkos, 2005).

Brainstorming is an easy way to attract children's interest in a particular subject and to contribute to their active participation. It can be used by the teacher to gather the ideas from the children or to determine their pre-existing knowledge and initial perceptions on a subject, and therefore identifying possible misconceptions. For instance, **in the case of nutrition education**, the educator can show students healthy and unhealthy food images. Children should say the first words that come to mind, the ideas are documented and finally compared/discussed in the class.

The method follows 3 basic steps:

- **Idea generation:** the class **responds to a question** and all **responses are documented**
- The process of **processing and classifying ideas**
- Stages of **analysis of ideas for conclusions** or the selection of a solution

Figure 6.
The method of discussion - the three key steps

A prerequisite for this method to be effective is for the participants to listen to all thoughts **with respect and to be accepting of other ideas**. As Kourmousse (2013) points out, for preschool children there should be no "correct" and "incorrect" answers but different views. The teacher should scaffold the process the smoothly and constructively help students reach the solution or the best practice.

There are some very important rules to follow for brainstorming sessions. All students should be oriented to the rules ahead of time, and the student leader should enforce them:

- All ideas, except for obvious jokes, should be acknowledged and recorded.
- No criticism is to be made of any suggestion.
- Members should build on one another's ideas.
- The leader should solicit ideas or opinions from silent members and then give them positive reinforcement.
- Quality is less important than quantity, but this does not relieve group members of the need to think creatively and intelligently.

Brainstorming is an initiating process; it must be followed by some other activity. For example, the group might use the ideas generated in the brainstorming session as the basis for another type of discussion. After the brainstorming session, the ideas should be categorized and evaluated, and as many as possible should be used by students in follow-up activities. The group may arrange the elements in priority order; for example, members may evaluate the suggested topics according to their importance for future study.

2.6 WORKING IN GROUPS

Group work or cooperative learning is a method of instruction that gets students to work together in groups of about 3-5 members in order to carry out an exercise or to discuss a subject. Then, each subgroup announces its result and the teacher coordinates a discussion between the groups. The technique is completed by synthesis and commentary by the teachers and interconnected with the educational goals or objectives served by the particular work in groups.

Identifying groups (how to divide, how many members in each group) can be done either by the teacher in a playful way, or by chance, or by the personal choice of the students. It should be noted that group formation should not be the same in a long-term program, for instance once four or five people have work three or four times together, then it is good they for them to change groups.

The value of cooperative learning to students has long been recognised and is also stressed in the section above. In the past two decades there has been a rapid growth in the use of small group learning experiences in education (Fink, 2004).

For group work to be effective, the role of the teacher is to foster a climate of mutual trust, to encourage children, to guide them and to coordinate the work of each group. It is also important that the groups are not homogeneous so that the most advanced children help the weaker, thus developing metacognitive skills, but also the weaker children in this way can more easily acquire new knowledge and skills. Finally, it is recommended that the number of members of each group do not to exceed 5 - the management of groups with more than 6 members is very difficult, in which case some students may not participate at all or even disturb the others, as and a result cancel out any benefits group work may have.

A CLOSER LOOK AT THE CHALLENGES

Although group work has the potential to encourage positive student learning experiences, research evidence suggests that this potential is not always realised (Fink, 2004, Pieterse & Thompson 2010). Some students (particularly students who do not feel confident about their ability to communicate) prefer to work independently, and find the group experience challenging and confronting. Also, teachers often underestimate the effort involved in organising effective group work. Staff have commented that group work can be time consuming and difficult to implement. Nevertheless, given the benefits for learning, it is important that all students have the chance to work in groups. When it comes to developing students' group work skills, there is no single best approach or assessment strategy. It all depends on your particular learning and teaching context and objectives. The challenge is to choose a range of strategies that will allow your students to develop effective group work skills within the context of your discipline.

2.7 ENHANCED LECTURE

The lecture is the most common educational technique in which the theoretical background is presented and the basic proposals for the thematic unit are formulated. Its key advantage is the rapid and immediate transmission of information. On the other hand, this technique attributes passive status to students, prevents concentration for more than 15-20 minutes, and does not achieve

the goals of changing attitudes and developing mental processes. It also presupposes that the students share the same learning rate and does not offer the lecturer the opportunity to gain feedback on the learning achieved (Tsimpouklis & Phillips, 2010).

However, a lecture is particularly effective when enriched with participatory activities. For example, assigning the role of listener gives students the opportunity to present points of agreement or disagreement with the lecture and to ask questions or clarifications about the subject of the lecture. Another method is when during the occasional interruption the learners are asked to give examples of the concepts presented or to briefly answer relevant questions. Lastly, clarification aims at clarifying information, ideas and abilities through performing a brief activity. Consequently, the concept of a lecture does not need to be abolished, but to incorporate activities that increase the interest and participation of students (Tsimpouklis & Phillips, 2010).

In modern times, with the aid of technology, probably the most commonly form that the enriched lecture takes is that of multimodal representation of information. When we are talking about multimodality in teaching we are referred to different modes that can be used to represent the content (i.e. verbal and non-verbal). When the learners are exposed to information in different formats they are encouraged to understand 'the relations between changes in representations and changes in actions or observations' as well as 'the value of these different forms of representation' (Conole et al, 2009). Presenting the same concepts in more than one mode can reinforce ideas and help students learn in ways that suit them best - students may not even notice the repetition. The modes may include audio, written, visual, gesture, or oral methods of conveying information and aiding learning. For instance, a lesson might include a Web page, an animated PowerPoint presentation, and perhaps a video so that the same material is given in three different ways meaning that the students have received the exact same information three different times.

Other strategies that are often employed to enhance the learning of students in the context of a lecture include:

- **Think-Pair-Share:** A widely used technique in which two students discuss a given question for two or three minutes, then share their results in a large class discussion.
- **Formative Quizzes:** Ungraded questions are used to gauge student comprehension. Instructors can ask students to use thumbs-up/thumbs-down hand signals to indicate if they agree or disagree with a statement. Instructors can also poll students with multiple-choice questions asking for a show of hands as each option is stated.
- **Topic Synthesis:** Students, rather than instructors, summarize the key points of the previous portion of the lecture.
- **Focused Listing:** Students to create a list in response to a specific question (e.g., the benefits of eating breakfast).
- **Outline:** Students fill in the blanks with an empty or partially filled outline in a limited time.

2.8 FIELD TRIP

A field trip is a visit to a place outside the regular classroom which is designed to achieve certain objectives, which cannot be achieved as well by using other means. Field trips give students the opportunity students to get out of the classroom and experience something new.

In a recent review (DeWitt, & Storksdieck, 2008) of the most significant literature and research on Field Trips as an educational method, it was found that learning on a field trip can, indeed, produce different results than learning in a classroom. Following is a summary of some of the positive effects of field trips that have been established.

POSITIVE EFFECTS ON STUDENT COGNITION APPEAR BELOW:

- Children that go on field trips as part of their educational experience show statistically significant learning about the field trip subject
- Children exhibit more knowledge about a subject if they learn about the subject on a field trip instead of learning about the subject in a classroom.
- Not only do students seem to learn more during field trips, but they expect to learn more during field trips.

POSITIVE EFFECTS ON STUDENT ATTITUDES TOWARDS LEARNING:

- Students enjoy learning on field trips; sometimes students even enjoy learning on their field trip more than socializing. When asked to pick their favourite parts of a field trip taken to a park, the students identified educational activities such as "casting animal tracks" and "studying the food web of the pond", more often than they identified social aspects likes "getting to play a game" or "getting to know their classmates better".
- Students enjoy field trip lessons more than they enjoy lessons taught on the same subject in a classroom.
- Field trips improve student attitudes towards subjects they are learning.

LONG-TERM POSITIVE EFFECTS ON LEARNING:

Although there are not very many studies that have examined the long-term effects of field trips on learning, researchers have, however, found some positive results.

- In a study of 7 and 9 year olds, both age levels were able to retain significant amounts of content as long as one month after their field trip (Falk, 1983)
- In another study of 13 and 16 year olds, MacKenzie and White (1982) found that those students participating in a geography field trip retained information better twelve weeks after the trip than those that did not participate in the trip.
- In an analysis of 9 year olds after their field trip to Great Smoky Mountains National Park,

in-depth interviews revealed positive long-term retention of information taught on the field trip and a perceived increase in pro-environmental attitudes by the students (Farmer, Knapp & Benton, 2007)

DESIGNING SUPPORTING MATERIALS FOR FIELD TRIPS WITH STUDENT LEARNING IN MIND

Though positive impacts of field trips on students are well documented, a cautionary note should accompany reports on these impacts. Not all field trips maximize learning potential equally. In fact, if not planned well, a field trip can become little more than a distracting trip away from school for students and their teachers. In order to make the field trip more educational, a teacher should develop learning materials that both prepare students for the trip as well as guide them through it.

Field trips are of greater educational benefit for students when implemented as a three-part learning unit.

- The learning component of field trips should begin with pre-activities to help direct student attention toward the focus of their visit.
- Pre-activities should be followed by the field trip itself.
- Finally, the field trip should be followed by post-activities to reinforce and reflect upon concepts learned on the field trip. (Leatherbury, 2011).

2.9 GUEST SPEAKER

Guest speakers have become an important part of the educational experience for students. They expose students to real-world life experiences from the position of someone who has been there. A Guest Speaker can be a great tool for the improvement of a topic, because it offers a new perspective and variety in the way it is taught, while it provides important specific information that is often omitted from a regular class (Cox, J., n.d).

In particular, a guest speaker may be invited as

- A guest speaker offers an excellent way to either introduce or conclude a class unit.
- The words and experience of someone deeply familiar with the topic offer a break from day-to-day classwork while putting a personal face on potentially broad and hard-to-understand concepts.
- A well-timed visit adds excitement to the class, engages students who otherwise may not be interested in the topic, and provides a quality way to vary class activities (Gatens, 2016)
- Students have a chance to learn about a specific topic in a way that helps them get fully involved in the class in a more approachable way of teaching, which in turn brings a better learning experience to the students.

2.10 DEMONSTRATIONS

A demonstration is "any planned performance by a presenter of an occupational skill, scientific principle or experiment", in other words, the best way to teach "how" is to "show how". Demonstrations can be used to provide examples that enhance lectures and to offer effective hands-on, inquiry-based learning opportunities in classes or labs (Eley & Norton, 2004).

This method of demonstration when carefully applied (ensuring that the active role of the learner is not jeopardised) has several advantages:

- saves time in presenting
- concentrates attention of learners on relationships to be understood
- makes efficient use of "power of observation"
- is a means of strong motivation
- can be used in training groups or individuals.

In using the demonstration method, the presenter should ensure that the learner understands the logical step-by-step procedures in doing the job, the principles that apply, and the related information. Planning the logical step-by-step points or activities is the key to a successful demonstration. These points must be carefully demonstrated and explained to the learner. In essence, the demonstration method of teaching shows learners how to do a task using sequential instructions with the end goal of having learners perform the tasks independently. The eventual goal is for learners to not only duplicate the task, but to recognize how to problem-solve when unexpected obstacles or problems arise. After performing the demonstration, the teacher's role becomes supporting students in their attempts, providing guidance and feedback, and offering suggestions for alternative approaches (Eley & Norton, 2004). An effective demonstration follows three steps of the "learning cycle": 1) The stimulus step (introducing the problem) 2)The assimilative step (demonstration and development of the understanding by the learner) and 3) The application step.

Figure 7. *Demonstration in steps*

2.11 SUMMARY

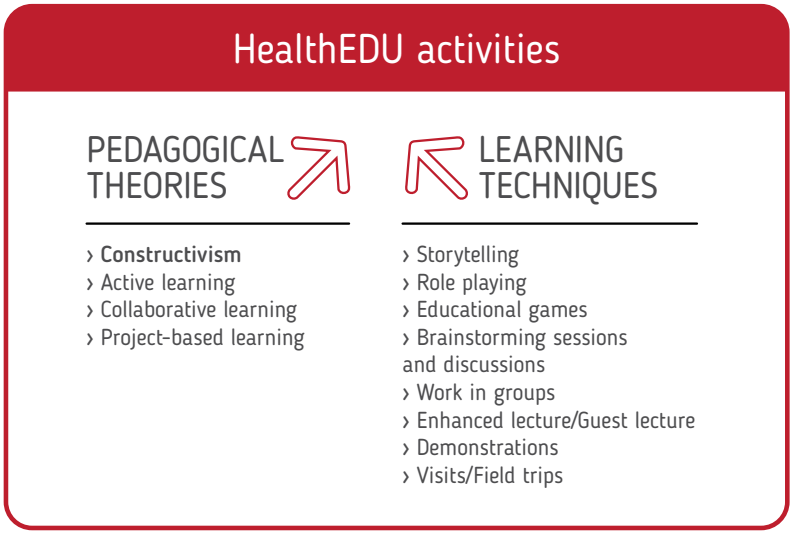
In summary, it is worth noting that teaching methods such as the above, provided they are properly applied by the teacher and do not conceal a teacher-centered teaching, apart from building knowledge, cultivate the following attributes and skills in students:

- Analytical skills
- Reflection
- Metacognitive abilities
- Critical and creative thinking
- Empathy
- Multiple intelligence

At the same time, when children participate in group work:

- the time of active participation of children is maximized
- knowledge is maintained more permanently
- curiosity is triggered and encourage brainstorming
- playful explorations and hands-on activities are encouraged
- collaboration is enhanced and developed
- students have the space and freedom to express their opinions
- mental and linguistic processes are activated through the exchange of views
- the dynamics of the group is strengthened
- it is possible to adapt the teaching to the individual differences of the children

The following scheme summarizes our theoretical considerations underpinning the HEALTHEDU pedagogical and methodological framework. The suggested learning activities (see III Part. PRACTICAL FRAMEWORK FOR NUTRITION EDUCATION) draw upon this framework and address to theory a more practical aspect.



Teachers should educate in the acquisition of a form of expression and personal experience to develop perception and communication skills, expanding knowledge about the environment and the different areas that conform the educational curriculum. In addition, learning by discovery requires imagination, sense of adventure and risk and the chance to stimulate options that would otherwise be relegated. The ludic and significant aspects make it possible to awaken in the students interest and appreciation for a subject that exceeds the learning of concepts.

Working cooperatively in projects allows a learning by competences and prepares the students to be able to apply the knowledge to concrete and novel situations. Other capacities that derive from group work are also developed, such as respect for the opinion of others, negotiation, and the need to make decisions in a consensual manner.

At the same time learning experience in real contexts and situations encourages meaningful learning and allows metacognitive processes. Thus, acquiring knowledge and using techniques, learning skills and abilities can be an achievement in problem solving.

Working with the techniques presented ensures the transferability of knowledge to novel, unexpected and changing situations, so that students are trained to find new solutions. It is also important to highlight the attention to diversity, flexibility as well as cooperation and help among equals, generates an environment in which everyone fits and leads to inclusive learning.

Modern pedagogical practices should consider the purpose of the education. If we want to educate for life you can not reduced teacher's work to superficial memorial learning with no sense for students. The methodologies presented foster critical thinking and allow teachers to train people able to face different situations in their lives.

The main problem of the lecture is that students often learn the contents decontextualized what ends up memorizing and repeating the correct answer when the requirement of the question arises. In this way, the usefulness of the contents worked ends with the evaluation and students forget quickly what they have been acquired, because they have already fulfilled their task. In addition, this learning does not imply an active experience for them, which makes it difficult to assimilate the contents in the long term.

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PRACTICAL FRAMEWORK FOR NUTRITION EDUCATION

PART III

1 DESIGNING CLASSROOM ACTIVITIES FOR NUTRITION EDUCATION

1.1 INTRODUCTION

Analysis of educational curriculum and policies of developed countries shows that one of the main focal points in education should be teaching the children the habit of adequate and balanced nutrition which will later lead to a long and high quality life in terms of physical and psychological health.

This educational program intends to improve nutritional habits, of 4-10 year old children by means of 8 primary messages based on the findings of the science of Nutrition and Dietetic, curriculum objectives and development characteristics of children.

These 8 primary messages were created with the intention to develop an innovative and comprehensive approach in teaching healthy nutritional habits. The main intention of the selected objectives is to make children adopt these nutritional habits in their present and future life. The messages were created with a flexible design to let the teachers have full control over the course of the lesson. Example classroom activities listed in this part are prepared on the grounds of the following primary messages. When implementing the activities you may refer back to the primary messages.

The classroom activities are grouped in 5 thematic areas: Food Pyramid, Water in Our Diet, Need for

Physical Activity, Educational Activities That Encourage Students To Reflect Upon Their Eating Habits and Encourage Pupils To Taste New Things. In the following pages, these 5 thematic areas are explained in detail. You can find classroom activities related to the thematic area after each thematic area. Please note that the classroom activities in each thematic area are designed in compliance with the 8 primary messages and their learning messages. These classroom activities are intended to reinforce learning objectives in these thematic areas through 8 primary messages.

1.2 PRIMARY MESSAGES

The primary messages and their learning objectives are as follows:

PRIMARY MESSAGE 1.

Nutritional habits of people living in different parts of the world may be quite different.

> LEARNING OBJECTIVES

Students will be able to:

1A Recognize that nutritional preferences may vary depending on various reasons such as culture, health status and body built.

1B Express that people living in different parts of the world have different nutritional preferences and habits.

PRIMARY MESSAGE 2.

I need nutrients for a healthy and active life.

> LEARNING OBJECTIVES

Students will be able to:

2A Express that we need nutrients for a healthy and active life.

2B Recognize that personal need for nutrients may vary.

PRIMARY MESSAGE 3.

I should have a balanced and adequate diet with foods listed on the food pyramid

> LEARNING OBJECTIVES

Students will be able to:

3A Recognize the five food groups and their nutritional value which are listed on the food pyramid.

3B Recognizes that the food listed on the Food pyramid are suggested to be consumed in different amounts.

3C Use the Food pyramid as a reference when preparing dishes.

3D Recognize that he/she needs different nutrients according to the time of the day.

3E Express that for a healthy life we need to eat all types of food.

PRIMARY MESSAGE 4.

Being active and doing sports help to keep healthy.

> LEARNING OBJECTIVES

Students will be able to:

4A Recognize that he/she has to be active during the day.

4B Recognize that doing sports and being active is good for his/her body and also strengthens his/her muscles and bones.

4C Recognize that the more he/she does exercise or is active the more nutrients he/she needs.

PRIMARY MESSAGE 5.

I should drink enough water during the day.

> LEARNING OBJECTIVES

Students will be able to

5A Recognize how much water he/she needs to drink to meet daily water requirements.

5B Apply hygiene rules when preparing food.

PRIMARY MESSAGE 6.

Living beings cannot survive without water.

> LEARNING OBJECTIVES

Students will be able to

- 6A Recognize that he/she must drink enough water during the day.
- 6B Drink sufficient amount of water during the day.
- 6C Recognize that water resources on earth are not infinite and saving water is important.
- 6D Explain the water cycle on earth

PRIMARY MESSAGE 7.

Adequate and balanced nutrition is NECESSARY FOR protecting health.

> LEARNING OBJECTIVES

Students will be able to

- 7A Recognize the diseases which are caused by malnutrition.
- 7B Recognize specific benefits and functions of nutrients in foods.

PRIMARY MESSAGE 8.

I know healthy and unhealthy foods.

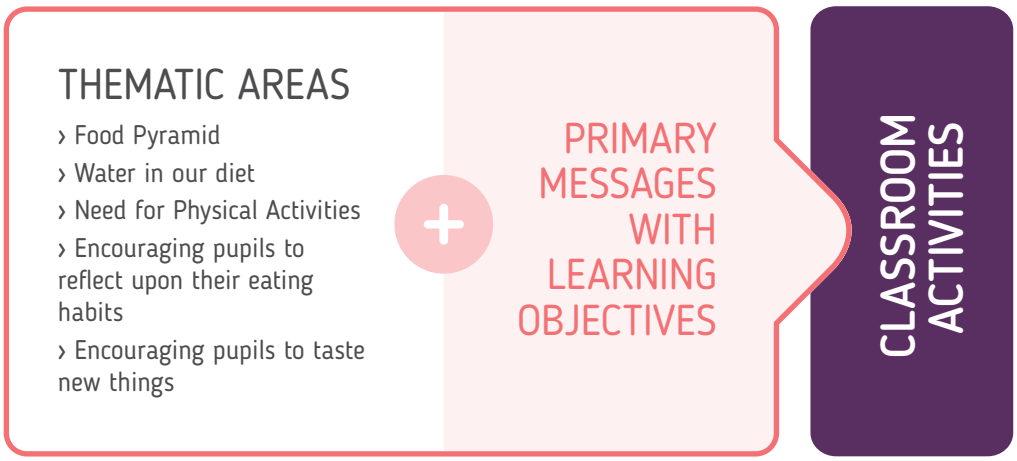
> LEARNING OBJECTIVES

Students will be able to

- 8A List healthy and unhealthy foods.
- 8B Select healthy and unhealthy foods.

The classroom activities in this e-book are designed in 5 thematic areas based on 8 primary messages. Some of the activities have several complementary parts which work in connection with each other, therefore these activities have more than 1 thematic area. In this case, teachers are free to follow an activity as a whole or use some parts of it according to the conditions of the teaching environment.

Figure 8.
THE RELATION BETWEEN THE THEMATIC AREAS AND THE PRIMARY MESSAGES



You can choose the activities that best suit the conditions of your school and class or alternatively use all of the materials. They can be edited, changed and reorganized according to the needs.

This part contains 8 primary messages intending to improve healthy nutritional habits of children and clues for teachers to educated children of different developmental levels. The activities, exercises and questions should be regarded as suggestions for teachers and parents. These examples of activities were prepared to improve healthy nutritional habits of all children regardless of individual differences.

The suggested activities were prepared using the student-centred methods and techniques which require the students to actively use cognitive skills such as critical and creative thinking. At this developmental level, participation of students and learning by doing is essential.

1.3 THEMATIC AREAS IN NUTRITION EDUCATION CLASSROOM ACTIVITIES

There is no doubt that teaching in a context always wins. As project team members we strongly believe in the famous words of John Dewey who said "Give the pupils something to do, not something to learn; and the doing is of such a nature as to demand thinking; learning naturally results." (J. Dewey, 1916) In the light of this famous quote of John Dewey, establishing a strong connection between what you are teaching to your students and a context will certainly help the students learn better and always remember. No matter who you are teaching, pupils in a classroom, attendees at a conference or interactive learners in a digital classroom, if you are not teaching in context or real-life situations the learners will most likely fail to retain what is taught. For this purpose, the classroom activities in this e-book are designed in five thematic contexts. In each thematic area, there are several classroom activities that can be used by the educational staff for teaching healthy nutrition

habits. The educators can make necessary changes in the activities according to the needs of their target group and other factors. The necessary activity pages, posters, charts and other photocopier materials are available in Annexes of this book. The teachers are also free to make any necessary changes in these activity pages for implementing an activity in the classroom. Each activity contains one or more primary messages, listed in the beginning of the chapter, to foster learning. The learning objectives of the primary messages are given below each message in the activity. Educators can make necessary changes if they deem they can adapt and use an activity in a different thematic area.

1.3.1 Food pyramid and learning activities that can be implemented in the class

When we list the foods that we need to eat each day from basic food groups to keep healthy we get pyramid-like diagrams representing the optimal daily number of servings for a person. This diagram is called Food pyramid. The Food pyramid in each country may be slightly different but the overall content is quite the same (see Fig. 9). The environmental, geographical and cultural differences also reflect on the food pyramids of the countries. While preparing a food pyramid for the kids, listing controversial foods with regards to health benefits such as wine should be avoided.

Figure 9.
Food pyramids in Project's partners countries (1-Lithuania[1], 2-Bulgaria[2], 3-Turkey[3], 4-5 - Spain[4], 6 - Italy[5], 7-Greece[6])


ПРЕПОРЪКИ
ЗА ЗДРАВОСЛОВНО ХРАНЕНЕ
за ученици на 7-19 години
в България
МИНИСТЕРСТВО НА ЗДРАВЕОПАЗВАНЕТО
НАЦИОНАЛЕН ЦЕНТЪР ПО ОПАЗВАНЕ НА ОБЩЕСТВЕНОТО ЗДРАВЕ

2


Sağlıklı Yemek ve Fiziksel Aktivite Piramidi
Sağlıklı Beslen, Sağlık İçin Hareket Et
Hareketsiz yaşam
Kuvvet-Esneklik-Denge
Haftada 2-3 kez
Dayanıklılık
Haftada 3-7 kez
Günlük aktiviteler
Hergün
Seyrek ve az miktarda tüketiniz
Süt, yoğurt, peynir grubu günde 2-3 porsiyon
Et, yumurta, kurubaklagiller günde 2-3 porsiyon
Sebze grubu günde 3-4 porsiyon
Meyve grubu günde 2-3 porsiyon
Tahıl grubu ekmek, bulgur, pirinç, makarna günde 3-7 porsiyon

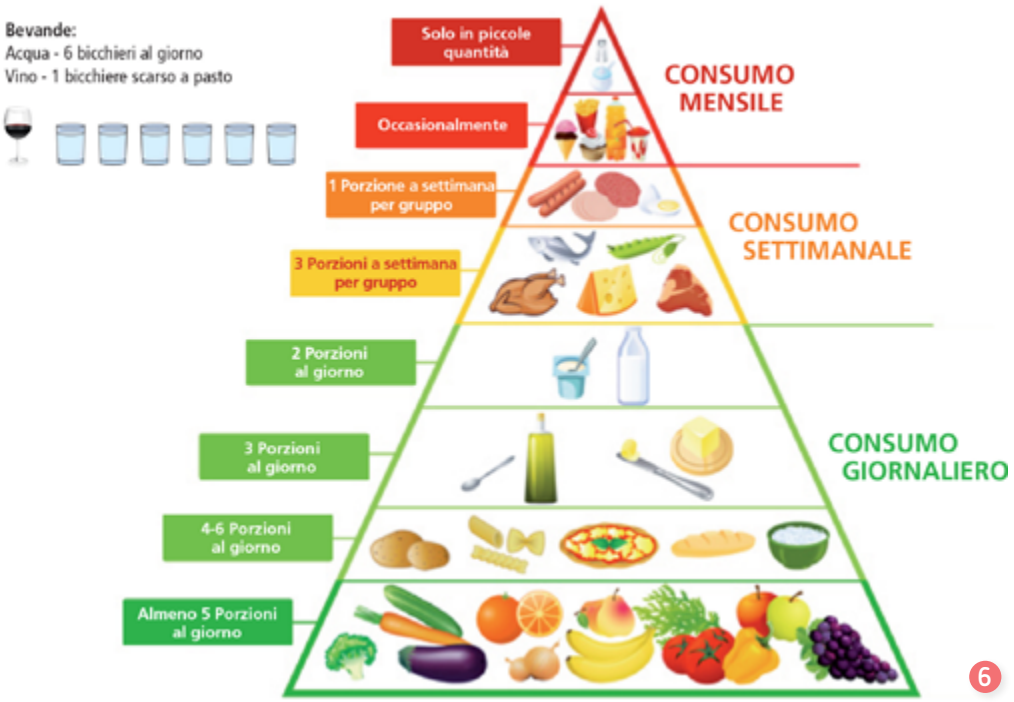
3

Modificado de la pirámide de la Sociedad Española de Nutrición Comunitaria 2004 y la pirámide de la Consejería de Salud de la Junta de Andalucía

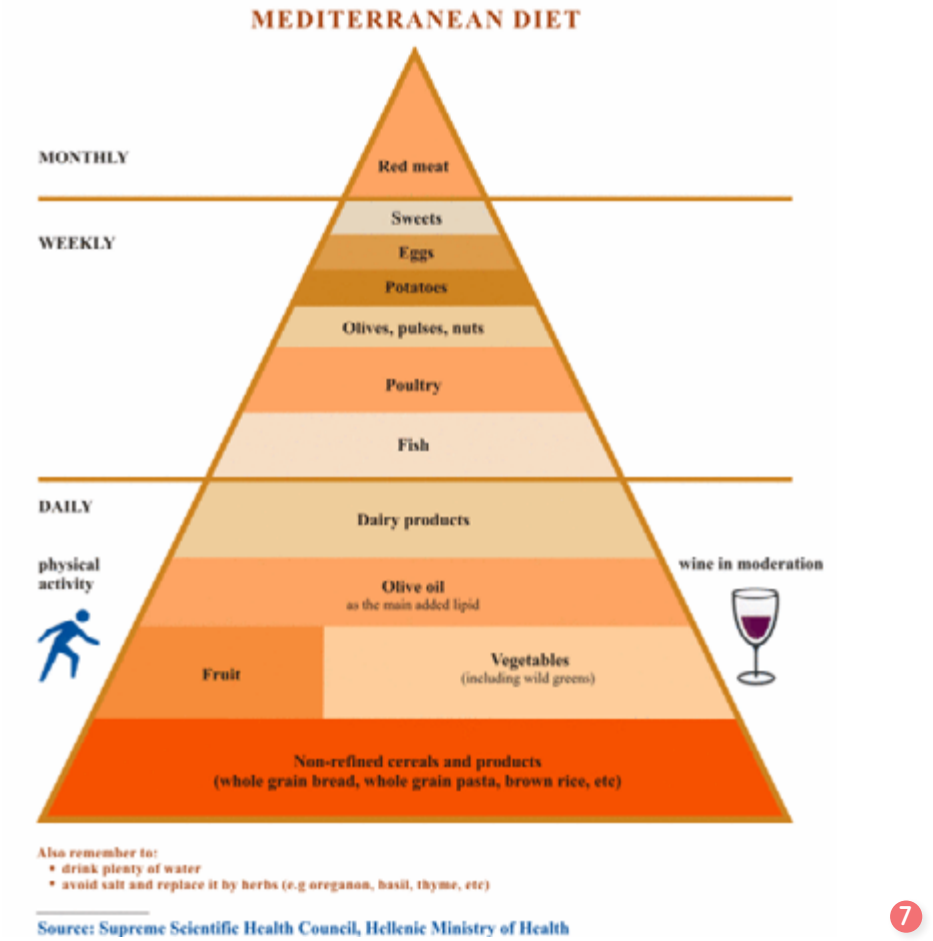
PIRÁMIDE DE LA ALIMENTACIÓN SALUDABLE

4

5


Bevande:
Acqua - 6 bicchieri al giorno
Vino - 1 bicchiere scarso a pasto
Solo in piccole quantità
Occasionalmente
1 Porzione a settimana per gruppo
3 Porzioni a settimana per gruppo
2 Porzioni al giorno
3 Porzioni al giorno
4-6 Porzioni al giorno
Almeno 5 Porzioni al giorno
CONSUMO MENSILE
CONSUMO SETTIMANALE
CONSUMO GIORNALIERO

6


MEDITERRANEAN DIET
MONTHLY
Red meat
WEEKLY
Sweets
Eggs
Potatoes
Olives, pulses, nuts
Poultry
Fish
DAILY
Dairy products
physical activity
Olive oil
as the main added lipid
wine in moderation
Fruit
Vegetables
(including wild greens)
Non-refined cereals and products
(whole grain bread, whole grain pasta, brown rice, etc)
Also remember to:
• drink plenty of water
• avoid salt and replace it by herbs (e.g oreganon, basil, thyme, etc)
Source: Supreme Scientific Health Council, Hellenic Ministry of Health

7

1 https://sam.lrv.lt/lt/veiklos-sritys/visuomenes-sveikatos-prieziura/mityba-ir-fizinis-aktyvumas-2/sveika-mityba-ir-gyventoju-mitybos-gerinimas/maisto-pasirinkimo-piramide-plakatas and recommendations https://sam.lrv.lt/lt/veiklos-sritys/visuomenes-sveikatos-prieziura/mityba-ir-fizinis-aktyvumas-2/sveikos-mitybos-rekomendacijos

2 http://ncpha.government.bg/files/4preporaki_uchenici_17-19g.pdf

3 http://www.saglik.gov.tr/TR,22550/saglikli-yemek-tabagim.html

4 https://www.msssi.gob.es/profesionales/saludPublica/prevPromocion/promocion/saludJovenes/docs/alimentSaludGuiaFamilias_2007.pdf and improved version provided by Sociedad Española Nutrición Comunitaria, suggested by Dr. Javier Aranceta-Bartrina http://cadenaser.com/programa/2017/03/29/hoy_por_hoy/1490775747_178603.html?ssm=14092012-Ser-rs-1-Fb

5 http://carnisostenibili.it/wp-content/uploads/2015/12/che-potete-vedere-sempre-a-pagina-59-della-nuova-versione-del-Quaderno..pdf (p. 59), http://www.piramideitaliana.it and recommendations http://www.salute.gov.it/imgs/C_17_pubblicazioni_652_allegato.pdf

6 http://www.fao.org/nutrition/education/food-based-dietary-guidelines/regions/countries/greece/en/

GROUP 1: CEREALS, CEREAL PRODUCTS, BREAD AND PASTA

Cereals are the dry seeds of plants. Flour, bread, brown rice, orzo, semolina, couscous, tarhana and other products produced from wheat, barley, rice, oat, corn and other grains belong to this group.

Bread, cereal and pasta are rich sources of Vitamin B, iron, minerals and pulp. Furthermore, being a good source of complex carbohydrates they release the energy that children need for their activities. Recommended daily consumption is 6-9 servings.

GROUP 2: VEGETABLES AND FRUITS

What is the difference between fruits and vegetables? If you are not a botanist and just consider the culinary stand point of view, the difference is usually quite simple. Practically, plants that can be cooked or used in salads are named as vegetables, while the others which can be eaten raw as dessert are named fruits.

Vegetables and fruits are composed of 70-98% water. Fresh vegetables and fruits are good sources of indigestible carbohydrates such as vitamins, minerals and cellulose. However, they do not give high energy and protein, but the need for vitamin C can only be met from these groups of foods. Carotenes, precursors of vitamin A, are found abundantly in green, yellow and orange vegetables and fruits. Plants with dark green leaves contain as much vitamin C as citrus. They are also rich in potassium and folic acid. Furthermore, they are rich in 37 antioxidants which together with minerals and vitamins protect the cells of the body. Another point is they help to regulate the intestinal activities. To prevent the nutritional loss in vegetables and fruits, every step from harvesting to end consumers should be carefully planned and controlled.

Recommended daily consumption of vegetables is 3-4 servings.

Fruits are excellent sources of vitamins A and C, potassium and other minerals which are essential for skin, eye and gingival health of children. They also contain carbohydrates and pulp. Children usually like eating naturally sweet fruits. Recommended daily consumption of fruits is 2-3 servings.

GROUP 3: MILK AND DAIRY PRODUCTS

Milk consumption is important for everyone and of all ages. Drinking milk, especially during the childhood, has a direct effect on growth, physical and mental development. Furthermore, it is important in preventing bone-related diseases which develop during or after adulthood.

Varieties: Fluid milk is the main product of the dairy industry and used as the basic ingredient of other dairy products. It is consumed at home and used in industry to make yoghurt, ayran (a traditional Turkish drink made with yoghurt, water and salt), cheese, skim-milk cheese, dried milk, butter, cream and ice-cream.

Milk, cheese and yoghurt are among the most important sources of protein, calcium and Vitamin D which are essential for healthy bones, teeth and muscles. Recommended daily consumption of these products is 2-3 servings.

GROUP 4: MEAT, POULTRY, BEANS, FISH, EGGS AND OILY SEEDS

Beef and meat products are important nutrients containing protein which supports growth and development. Meat products make a group of nutrients containing biologically important and high-quality protein. It contains protein, fat, B vitamins (thiamine, riboflavin, and niacin), minerals (iron, phosphor), flavourer organic substances, water and very little glycogen (animal starch). Depending on the age of the animal, the water content of meat may vary between 50-75%. Meat of older animals is harder as a result of the decrease in the amount of water in animal body due to aging. Butchery and poultry animals are similar with regards to nutritional facts. White meat from poultry animals has less iron and fat content, but more protein and niacin compared to the red meat. Fish products are rich in vitamins (especially water-soluble vitamins such as Vitamin A, D, K) and minerals (phosphor, iodine, potassium), while offal meat is rich in A and B Vitamins, protein and iron. The energy value of foods varies depending on the fat content.

Eggs are loaded with high quality animal protein, it is so high that its protein quality is used as a standard to determine the protein quality of other foods. Furthermore, due to high-quality protein, eggs can also be used as a substitution for meat. Due to protein content eggs are an important product of food that should be consumed by all people of all ages. Given the importance of its content, it is one of the cheapest and best sources of protein especially for low-income people and babies, children, pregnant women and breast-feeding mothers. Nutritional Facts: eggs contain all of the nutrients necessary for a healthy life, nearly as much nutrients as breast milk. Eggs are 100% bioavailable which means that all of the protein content in egg is digested and used within the human body. It ranks at the very top of the Protein Digestibility Corrected Amino Acid Score (PDCAAS) list. Thus, breast-milk and eggs are called the highest quality proteins. It contains all of the 13 vitamins which are essential for a healthy growth, development and life.

Beans, the mature seeds of leguminous plants, are among the first cultivated plants by humans. Carbohydrates and proteins are the essential compounds found in beans. The outer parts of beans contain pulp and under the pulp there is starch. Due to the indigestible pulp content in the beans, their protein quality is relatively poor. Adding a little amount of meat while cooking beans will increase protein quality.

Menus for children and heavy workers should include oily seeds which are rich in energy and protein. Due to their rich unsaturated fat, Vitamin E and magnesium content, oily seeds, especially walnut, lower the risk of the coronary heart diseases and cancer.

Recommended daily amount of these foods is 2-3 servings.

GROUP 5: FATS AND SUGAR

Fats and oils are mainly categorized according to the source they are obtained from, vegetable or animal. Vegetable oil is commonly produced from olive, sunflower, corn, soybean, and other similar plants by using special techniques. Oily seeds of plants such as hazelnut, walnut, peanut, almond, sesame and sunflower have high oil content. Animal fat is primarily rendered from animal tissues (tallow, tail fat) and milk (butter). However, some other animal-origin foods (dairy products, beef, eggs, etc.) contain fat. Animal or vegetable-origin margarine is another form of fat that we often use in daily life. Margarine is produced from animal fat and vegetable oil using special hydrogenizing techniques to saturate. Margarine contains flavours or treatment agents to enhance colour, smell and taste and also preservatives to extend the shelf life, as well as vitamins to increase the nutritional value. Fats take a longer time to digest, which means that they will stay in the stomach promoting the feeling of fullness.

Sugar is a source of energy. Sugar is extensively used in pastry products, desserts, jam and marmalade manufacture, confectionery products and drinks. It is also caramelized and often used to cover some types of desserts (cream caramel). Caramelization is the process of dry sugar or high density sugar solution turning brown through heat being applied.

Recommended daily serving of this group of foods vary according to personal energy need since their energy content is significantly high. The amount of sugar and desserts in diets is increased or decreased according to the energy need (MEGEP, 2007).

Some nutrients such as proteins, pulp, vitamins A, D and C, calcium, iron, zinc and iodine minerals are particularly important for pre-school and school children.

PRACTICAL ACTIVITIES

ACTIVITY 1

DURATION

40 min.

THEMATIC AREA

Food Pyramid (This activity can also be used to encourage students to eflect their nutritional habits)

SUGGESTED MATERIALS

Food pyramid poster, food cards, copies of my story, my activity diary pages.

Primary Message	Learning Objectives. Students will be able to:
I need nutrients for a healthy and active life.	- Express that we need nutrients for a healthy and active life. - Recognize that personal need for nutrients may vary.
I should have a balanced and adequate diet including foods listed on the food pyramid	- Recognize the five food groups which are listed on the food pyramid and their nutritional value. - Recognize that the foods in the food pyramid should to be consumed in different amounts. - Use the food pyramid as a reference when preparing dishes.

This activity primarily intends to highlight the importance of consuming adequate amounts of foods and drinks listed on the pyramid. To do this, several activity pages will be worked out successively. It is ideal to start the activity with a warm-up discussion which helps to trigger the students' preliminary knowledge related to adequate and balanced diet. During the discussion, making a brief explanation about the food pyramid will help to improve the discussion and make a smooth transition to the next part. A food pyramid poster is an efficient visual material for catching the attention of students as a starter.

During the discussion, ask the students to use mathematical expressions or symbols such as words of quantity, fractions and bar charts when talking about the foods and their distribution on the food pyramid. After that, explain the students why these nutrients are important for health.

Use "Food Cards" during your explanation.

For example: nutrients such as meat, egg and cheese enable the human body quickly heal the wounds and scars. You can give other examples such as "Milk and yoghurt make the bones and teeth stronger".

After the discussion, continue with the game "Who am I?" to reinforce the food groups. Tell them to look and review the five groups of nutrients in the food pyramid. In the light of the following explanation, tell them how you will play the game. Choose one of the students and whisper the name of a food or a drink which you choose from the food pyramid. This student is supposed to avoid directly pronouncing the name of the food, so that others can ask questions to guess the food or drink. The first rule of the game is the student who tells the other students about the whispered food should start with telling the group about that food on the food pyramid. The student talks about the food in detail and answers the questions about that food or drink. The game goes on this way until a student correctly guesses the food or the drink. Now, the first student chooses a food from the pyramid and whispers it to the student who correctly guessed. It is his/her turn to tell about the food and answer the questions from the other students. You can make micro explanations about each food or drink that is chosen by the students during the course of the game. You can allocate as much time as you think it is satisfactory for the students.

Having finished the game, ask the students to draw a picture of their healthy food plate. During the drawing activity place the food pyramid poster in an easy to see place. After the students finish drawing, to honour them exhibit the pictures they drew in a suitable place such as the bulletin board.

Continue with the story activity. Copy and hand out "My Story" activity page. Tell the students that they can create their own mini-story books by simply cutting and sticking mixed pictures. Please note that the important point during this activity is that the students should use keywords such as food pyramid, physical activity, musculoskeletal system (you can make simpler, i.e. muscles and skeleton), nutrients and food groups. After finishing cutting and pasting, give them enough time to tell their story. While they are telling their story give them appropriate feedback when necessary. Also wait for the best time to make a transition to the next part, for example when students tell about the physical activities that they do ask them "What is the role of nutrition in achieving the desired performance in games and physical activities?". Continue by asking the students which sports they like doing and which games they like playing. Tell them in the next activity they will fill in an activity diary (for a single day) for the activities they regularly do to keep healthy. Hand out "My Weekly Nutrition and Activity Diary" activity page. This activity is designed for a whole week. Each student uses My Weekly Nutrition and Activity Diary to tell other students about the nutrition and activities that he/she does during a week. The goal of this activity is that each student should reach the goal of doing at least 60 minutes of physical activity every day. There are seven lines for the seven days of the week. Give them one whole week to record the time they spend for activities during a week. On the same day in the following week, give them enough time to talk about their whole week. Also give them appropriate feedback in the context of healthy nutrition and let them see if they reached the goal of 60 minutes of physical activity a day.

ACTIVITY 2

DURATION

40 min.

THEMATIC AREA

Food Pyramid (This activity can also be used to encourage students to reflect their nutritional habits)

SUGGESTED MATERIALS

"I Eat for My Skeleton and Muscle Health" activity page, food cards, "I Live an Active Life" activity page, "My Strong and Healthy Bones, Muscles" poster

Primary Message	Learning Objectives. Students will be able to:
I need nutrients for a healthy and active life	- Express that we need nutrients for a healthy and active life. - Recognize that personal need for nutrients may vary.
I should have a balanced and adequate diet with foods listed on the food pyramid	- Recognize the five food groups and their nutritional value which are listed on the food pyramid. - Recognize that the foods in the food pyramid should to be consumed in different amounts. - Use the food pyramid as a reference when preparing dishes.
Adequate and balanced nutrition is necessary for protecting health.	- Recognize diseases caused by malnutrition. - Recognize specific benefits and functions of nutrients in foods.

SUGGESTED MATERIALS

To warm up the students with the topic, explain the importance of balanced diet for the growth of bones. Copy and hand out "I Eat For My Skeleton and Muscle Health" activity page and let them explore which foods they should eat for healthy growth of bones and muscles. Explain the visual items on the activity page. The diagram visual on the activity page represents a healthy food plate. This diagram like plate visual enables the students to grasp the idea that they should eat various foods in different pro-

portions. While working on this page, the students should place the visuals of the foods on the plate to create their healthy food plate; for this purpose they can draw arrows, cut and stick the visuals or simply draw the foods. The essential point in creating their food plates is that they should reflect the real daily amount that they usually eat or drink. After they finish, let them compare their plate (the real amount that they consume) to the suggested amounts and proportions on the food pyramid. Ask questions about the reasons of differences between their plates and the food pyramid, and give appropriate feedback when necessary.

Upon finishing question and answer discussion, ask them to prepare their lunch bags for the next day with foods listed on the food pyramid. If you think it is not suitable for every student in the classroom, you can ask them to do this activity as a poster. The next day, let them talk about it and share how they prepared their lunch bags. To give feedback about the preparation of the lunch bags, ask the students to find out which food groups are not included in the meals that their friends prepared. Walk around and check if there are foods in the lunch bags such as milk, yoghurt, cheese, meat, poultry, fish and egg, which strengthen the musculoskeletal system. When you see such foods, you can start a classroom discussion by asking questions such as "Who brought foods good for muscle and skeletal system?". In the course of the discussion, ask them to remember the benefits of these foods that you previously told using the "Food Cards", then talk about these foods again to enhance their learning.

Next, copy and hand out "I Live an Active Life" activity page. Ask them to write at least two of the activities that they did during the last week. At the end of the activity, based on their writing, let them reach one of the following conclusions: "I should do more activity" or "I am active enough, I have an active life".

Continue with sticking "My Strong and Healthy Bones, Muscles" poster on a suitable place where all students can easily see it. After reemphasizing the importance of musculoskeletal system, reinforce their learning by asking them which foods in the poster are the most efficient in improving the health of muscles and bones. At the end of the discussion tick the foods and have them recognized; dairy and meat products are the most beneficial groups of foods in protecting and improving muscle and bone health.
Start a discussion by asking the students if they know the probable health risks and diseases that people who do not eat sufficient amount of these foods may have. You can make a short drama or role-play based on the students' answers and responses.
After the discussion, ask the students to search for the musculoskeletal diseases which are caused by malnutrition and share what they learn as a short presentation. The students can find various diseases as results of their search. To keep the coherence within the topic, you should focus on rachitism and osteoporosis (with regards to bone health) . Continue the discussion with questions such as "What happens if we do not consume enough milk and dairy products as we grow older?", "Why are infants, especially babies, fed with milk?".
As an additional activity, ask your students to cut and stick interesting news or visuals from the newspapers or magazines to make a poster and share with their friends.
As a follow-up activity, ask them to find a delicious recipe which is good for musculoskeletal health. If possible, with the help of their parents, they can cook or make dishes according to the recipes and bring them to the classroom. As parental involvement is important, contact the parents for their involvement.

ACTIVITY 3

DURATION

40 min.

THEMATIC AREA

Food Pyramid

SUGGESTED MATERIALS

Food Pyramid Poster and Food Cards, Which foods do I eat more (pictures)

Primary Message	Learning Objectives. Students will be able to:
Nutritional habits of people living in different parts of the world may be quite different.	- Recognize that nutritional preferences may vary depending on various reasons such as culture, health status and body built. - Express that people living in different parts of the world have different nutritional preferences and habits.
I should have a balanced and adequate diet with foods listed on the food pyramid	- Recognize the five food groups and their nutritional value which are listed on the food pyramid. - Recognize that the foods in the food pyramid should be consumed in different amounts. - Use the food pyramid as a reference when preparing dishes.
Adequate and balanced nutrition is necessary for protecting health.	- Recognize the diseases which are caused by malnutrition. - Recognize specific benefits and functions of nutrients in foods.

SUGGESTED ACTIVITIES

This activity intends to increase awareness of children about the foods they like and their nutritional habits as well as nutritional preferences and habits of other people.

Start this activity with the food pyramid poster and food cards.

While showing them different food cards, ask the following questions:
- What foods are there in this picture? Say their names.
- Which foods do you like most?
- Which of these foods do you eat least?
- What happens if we do not eat these foods?
- Which food groups are there on the food pyramid?
- Why these foods are recommended to be consumed in different ratios?
- Which food groups do you think we should eat more?
- For a healthy life, we should eat all of the foods in adequate amounts and in a balanced manner. Why?

Hand out "Which foods do I eat more?" and let them compare their answers with the ratios in the food pyramid.

Give enough time for all the students to explain the reasons behind their choices (why they chose or did not choose these foods on the activity sheet). Listen to their explanations and give appropriate feedbacks. As an additional task, give them different situations to pantomime such as eating the favourite dish, eating a less favourite dish, tasting a dish for the first time, smelling the cookies that mother made. After pantomiming each situation ask them questions such as "How do you feel?, Did you like the food? What did your mother cook today? How was the food that you have just tasted? For example, after a student pantomimes the situation "tasting a food for the first time" ask him: "How was the food? Did you like it?".

Now, ask them what they had for breakfast, lunch and dinner? You can ask why they have different foods in each meal. After eliciting answers from the students, explain why we have different foods at different times of the day.

Ask them what they eat on special days and occasions (feasts, Christmas, birthday, etc.) and then he/she can ask the students to explain why they prefer these foods on these days?

In order to have an insight into the topic, you can also ask them questions about the nutrition of people at different ages.

In this context, ask them to explain why the babies cannot eat all kinds of foods , for example why a baby cannot eat an apple.

Ask them what they know about the foods that their relatives, neighbours or friends from different regions or countries eat. Start a discussion and give appropriate feedbacks to emphasize that people living in different parts of the world have different nutritional habits.

ACTIVITY 4

DURATION

40 min.

THEMATIC AREA

Food Pyramid

SUGGESTED MATERIALS

Visuals of healthy and unhealthy foods, visuals of two people one with a good healthy posture and the other one with a bad health condition caused by malnutrition.

Primary Message	Learning Objectives. Students will be able to:
I should have a balanced and adequate diet with foods listed on the food pyramid	- Recognize the five food groups and their nutritional value which are listed on the food pyramid. - Recognize that the foods in the food pyramid should be consumed in different amounts. - Use the food pyramid as a reference when preparing dishes.
Adequate and balanced nutrition is necessary for protecting health.	- Recognize the diseases which are caused by malnutrition. - Recognize specific benefits and functions of nutrients in foods.
I know healthy and unhealthy foods.	- List healthy and unhealthy foods. - Select healthy and unhealthy foods.

SUGGESTED ACTIVITIES

Before coming to the classroom print out visuals of healthy and unhealthy foods and drinks. The food cards can be used for this purpose but you may need to print out unhealthy foods and drinks. You should also print out pictures of a healthy and unhealthy person. Visuals of these two people should be carefully selected in order to inform the students at the very first glance

that the conditions in the pictures are caused by healthy and unhealthy foods and drinks. Show the students photographs or pictures of people with diseases caused by malnutrition (fat, extremely thin, children with tooth decay, tired people, etc.) and food visuals (milk, yoghurt, meat products, vegetables and fruits, beans, nuts, hamburger, fried food, chips, fizzy or sweet drinks, cakes and confectionery, etc.). While showing these pictures you can comment or use appropriate exclamations to let them interrelate the situations in the pictures and healthy or unhealthy nutrition. For example, when showing the picture of a fat person "Oooh! I think, he ate a lot of hamburgers and chips" or when showing the picture of the healthy person "Oooh! I think he eats enough fruits and vegetables" etc. Ask them what they think about the pictures and also "Why does he look unhealthy? Why does he look healthy? What makes them healthy or unhealthy?". Elicit their comments and give appropriate feedback. After their comments, explain them that the diseases or unhealthy situations in the pictures are closely related to the foods you showed them. Strongly emphasize that an unbalanced diet, in other words, eating insufficient or excessive amount of foods may cause health problems.

Now, ask the students to think about the risky foods around, at home, at school, etc. Elicit their answers and start a discussion about what they should do. Start the activity of grouping the foods as healthy and unhealthy foods. Hand out the pictures of foods and drinks, and also the pictures of healthy and unhealthy people. Tell them that they are going to cut the pictures, then group them as healthy and unhealthy. After that let them stick these pictures on the correct picture; pictures of healthy foods go under the picture of the healthy person who has a good posture while pictures of unhealthy foods go under the picture of the overweight person. Give them enough time to explain and justify why they sticked these pictures in these places. Give them appropriate feedbacks. After finishing the activity, exhibit the sticked visuals in a suitable place in the class or school.

ACTIVITY 5

DURATION

40 min.

THEMATIC AREA

Food Pyramid

SUGGESTED MATERIALS

Food pictures, brochures, cards, food pyramid poster and/or visuals.

Primary Message	Learning Objectives. Students will be able to:
I should have a balanced and adequate diet with foods listed on the food pyramid	- Recognize the five food groups and their nutritional value which are listed on the food pyramid. - Recognize that the foods in the food pyramid should be consumed in different amounts. - Use the food pyramid as a reference when preparing dishes.
Adequate and balanced nutrition is necessary for protecting health.	- Recognize diseases caused by malnutrition. - Recognize specific benefits and functions of nutrients in foods.
I know healthy and unhealthy foods.	- List healthy and unhealthy foods. - Select healthy and unhealthy foods.

One week before this activity, ask the students to obtain visual materials such as pictures, brochures, inserts and posters about foods from the markets or stores. Put the visual materials in a box. Place the food pyramid poster in an easy-to-see place in the classroom. Explain your students why you placed that poster. Emphasize that we need the nutrients in the food pyramid for a healthy life, then explain what Adequate and Balanced Nutrition means. You can simply use question&answer method while explaining benefits of Adequate and Balanced Nutrition.

Properties of a healthy person:

- Good posture

- Lively and attentively looking eyes
- Well-balanced, smooth, slightly humid, velvety and rosy colour skin
- Vivid hair
- Strong and normally developed muscles
- Straight, well developed arms and legs
- A person who is appetent and willing to work and does not frequently have headaches.
- Mentally, psychologically and socially developed and hardworking

Divide the students into two groups. Ask them to select the pictures of the foods necessary for adequate and balanced nutrition that are listed on the food pyramid. Tell them to prepare "HEALTHY FOODS" and "UNHEALTHY FOODS" posters using the selected pictures. This activity will enable the students recognize both healthy foods listed on the food pyramid and delisted unhealthy foods.

1.3.2 Water in our diet and learning activities that can be implemented in the class

Our body needs water to digest food, carry the nutrients to the cells, remove the toxins produced as a result of biological process in the cells, and regulate body temperature. Being hydrated is essential for health.

Plain water, visible or invisible water or juice in foods and nutrients, are called as "fluids". Tap water and water in foods and drinks meet our daily water need. Therefore, drinking water and other drinks are important to maintain the balance of the body fluids. Our need for water must be met from clean and safe supplies.

FUNCTIONS OF WATER IN THE BODY AND ITS BENEFITS:

- Water is important for the digestion of foods and absorption of nutrients.
- Helps to regulate body temperature. · Plays a significant role in the cooling mechanism of the human body by the evaporation of perspiration from the skin.
- Removes toxins and waste products from the body thereby cleansing it.
- Carries nutrients and substances to the cells.
- Helps to dissolve solid substances which the cells need to function properly.
- Plays a major role in blood circulation through the body.
- Protects brain, spinal cord and other organs from external impacts.
- It is responsible for carrying nutrients and hormones to where they are needed.
- Drinking enough water is essential for metabolism to work properly..
- Suppresses the feeling of hunger.
- Has an important role in excreting the wastes and toxins released from the fats burnt in the body.

- Replenishes the skin and maintains flexibility.[9]

Getting children into the habit of drinking plenty of water during the day is one of the best health investments for their future life.

Children should be taught the importance of water for a healthy life. Unlike the adults, children sometimes may not be aware of thirst. Parents and teachers have an important responsibility to monitor children's water consumption and remind them to drink water.

Our most essential need is water

Actually, a human can survive up to weeks without food, but water is a different story. Under the best conditions, it is not possible to go without water for more than a few days. Regular drinking of water is enough to meet the water need of children. Water is everywhere in the body. It reaches to all the cells, organs and even the brain.

The brain of a child needs water too.

Insufficient water intake does not only have negative impact on physical condition but also causes deterioration of mental performance and hampers learning capacity by causing lack of attention. This situation negatively affects school success. Brain is the most complex organ in the body. Thinking, questioning, analytical thinking, learning and many other activities are all carried out by it. It is primarily composed of water. The brain of an adult is made up of 70% water. Therefore, sufficient water intake is crucial for the proper functioning of the body and the brain.

How much water should a child drink a day?

The daily of amount of water a child should drink depends on factors such as age, gender, weight, height and performed daily activities. However, there is a minimum amount of water that every child should drink. According to the statistics reported by Food and Nutrition Board of The National Academy of Sciences, Institute of Medicine, the dietary reference intake of water for children are as follows:

- 1-3 years: 1,3 liter*
- 4-8 years: 1,4 liter
- Girls between 9-13 years: 2,1 liters / boys 2,4 liters
- Girls between 14-18 2,3 liters / boys 3,3 liters

*** 1 liter is approximately 5 mid-size cups or glasses**

How to make sure a child drinks enough water

9 https://www.medikalakademi.com.tr

Observing the toileting frequency of a child is the most practical way to know if he or she drinks enough water. Toileting frequency no longer than 2-3 hours and normal density urine with pale to yellow colour is the indication that the child is drinking enough water and is sufficiently hydrated. Turkey ranks second after England in the list of urinary lithiasis (urinary system stone diseases). Watching and controlling the amount of water intake and gaining a habit of drinking enough water at early ages will play a major role in decreasing the risk of diseases related to the urinary system.

Make sure that a water bottle is always present in the school bag.

Children might forget to drink water while they are at school. Seeing a water bottle in the school bag will certainly remind them that they should drink water. It promotes sufficient water intake. To provide children with good quality and healthy drinking water, parents should make sure that there is clean and fresh drinking water always available at school and also that water reservoir is cleaned on a regular basis if it is supplied from a storage tank. Another important point is that the quality of water put in the water dispensers at school should also be controlled because drinking clean water is the basic rule of a healthy life.

Children should start the day with drinking water.

Children should be encouraged to start the day with drinking water. Placing a water bottle or a jug within the easy reach at all times for children may attract them and increase their water consumption.

Beware of the hazards of fizzy drinks!

Water in the school bag should be changed daily. They should not be allowed to drink fizzy drinks to suppress the feeling of thirst.

Parents should become good role models for children.

For most of the children their parents are the most important role models while learning new things. So, to develop children's habit of drinking plenty of water, parents should drink enough water in order to be good role models. Therefore, parents and teachers should frequently drink water and reinforce the importance of water for health when they are with children[10].

10 http://www.pinarsu.com.tr

PRACTICAL ACTIVITIES

ACTIVITY 6

DURATION

40 min.

THEMATIC AREA

Water in our diet

SUGGESTED MATERIALS

A bottle of drinking water and glasses, water cycle document (pdf available in the annexes), freezer bags, blue ink, markers, scissors and glue.

Primary Message	Learning Objectives. Students will be able to:
Living beings cannot survive without water	- Recognize that he/she must drink enough water during the day. - Drink sufficient amount of water during the day. - Recognize that water resources on earth are not infinite and saving water is important. - Explain the water cycle on earth

SUGGESTED ACTIVITIES:

The main purpose of this activity is to have the students recognize that all living beings need water to live and also how the water cycles in nature. To make a smooth transition to the activity take a bottle of drinking water and glasses to the classroom. Put them on the table. After a short while, ask your students "Does anyone want to drink water?". Serve water to those who say "YES". Start a discussion by asking "Is it possible to live without water?". Give enough examples during the discussion and make it clear that living without water is not possible for living beings including humans, plants and animals.

"Do you know the formation of water in nature?" ask them. Listen to their answers and give appropriate feedback. Show them the Water Cycle document included in the Annexes of this book on a large screen, if available, on a projector. While showing them the illustration of the

water cycle, explain that water on earth never finishes but recycles through some natural events such as evaporation, formation of clouds, cooling, precipatation, accumulation under the ground, etc. Explain the connection between the sun, vaporization and formation of precipitation in this water cycle. Print out enough copies of the colouring pages in the Water Cycle document before coming to the lesson. Let them colour the objects on the activity page. After colouring the activity page, announce that they will make a cut and stick activity with this page. Ask them to cut the objects and put them aside. Hand out blank sheets of paper on which they will stick the objects that they have just cut. Tell them that they should stick the objects in appropriate places on the blank sheet of paper in order to illustrate the water cycle on earth. Walk around and help them, give feedback.

After finishing the cut and stick activity, form groups of students with 4 members each and hand out transparent colourless plastic bags (if available freezer bags), blue ink and colourful markers to each group. Tell them that they will draw the water cycle on the plastic bags and make a water cycle experiment. Each group can write the name of their group on the plastic bags, such as clouds, drops, rain, and etc. Next, let them draw as much environmental figures as they can on the bags such as land, vaporization, sun, mountain and clouds. Remind them the previous activity when they worked with similar drawings. Tell them to fill in the plastic bags with water and add some blue ink, so that water resources on the plastic bags such as sea and lakes will look more realistic. Next, ask them to close the plastic bags tightly in order to keep the vapour inside the bag. After all groups close their bags, ask them to place the plastic bags on the window, so that the light coming through the window will make the drops and the evoparation process more visible. They will be able to observe clouds, land, sun, sea, drops and other environmental items and water formation on the bag. The hotter it gets the more drops will be formed inside. Ask questions about their observation. Explain them that there is an infinite circle of water on earth.

ACTIVITY 7

DURATION

40 min.

THEMATIC AREA

Water in our diet

SUGGESTED MATERIALS

Two plants in two separate vases, water, blue ink, white paper, crayons.

Primary Message	Learning Objectives. Students will be able to:
Living beings cannot survive without water	- Recognize that he/she must drink enough water during the day. - Drink sufficient amount of water during the day. - Recognize that water resources on earth are not infinite and saving water is important. - Explain the water cycle on earth

SUGGESTED ACTIVITIES:

To trigger the pre-existing information about the importance of water for the living beings, start a discussion by asking "What will happen if water finishes on earth?". Try to improve the discussion by giving feedback and answering possible questions. When you think all the students are focused on the topic and ready for the activity, tell them you will make another small experiment about the importance of water for living beings. For this purpose, bring two plants with green leaves in vases. Together with the students add some blue ink in the water to let them see the water being absorbed from the soil and carried to all parts of the plants. Water only one of the plants from time to time with ink added water but do not water the other one. In the following days let the students observe that the regularly watered plant is green and continues to grow because it is watered, while the other plant becomes pale and almost dies. Show them the blue ink that reached the inside of the leaves so that the students can see the water transferred within the body of the plant. To emphasize that water is essential for life, ask them "What do you think about these two plants. Do you think water is important for them?". Give appropriate feedback. After a short question and answer period, give them the opportunity to reflect upon what they think about the experiment and hand out blank sheets of paper and crayons. Let them talk about their drawings and share with their friends. Give appropriate feedback about their observations. Emphasize that we process water to make it drinkable that is why we should save water although there is an infinite water cycle on

earth. Explain them that this infinite water cycle does not mean we can use as much as we want and that it is the most valuable resource on earth.

ACTIVITY 8

DURATION	THEMATIC AREA	SUGGESTED MATERIALS
40 min.	Water in our diet	Experiment materials (two glasses, some muddy water, some tissue, world globe.

Primary Message	Learning Objectives. Students will be able to:
Living beings cannot survive without water	- Understand that he/she must drink enough water during the day. - Drink a sufficient amount of water during the day. - Recognize that water resources on earth are not infinite and saving water is important. - Explain the water cycle on earth

To let the students see that a vast majority of earth is covered with water, bring a globe of world to the classroom or show them the view of the earth from space on a large screen. Emphasize that this huge amount of water on earth is vital for the living beings. Then, ask them "We have a lot of water on earth. Do you think all the water on earth is drinkable or not?". Elicit the responses and explain that we cannot directly drink water found on earth. If we drink it without processing, microorganisms in water may cause infections and diseases thus raising risk to our health. Tell them we can only drink water after it is processed and sanitized in huge water cleaning plants. Announce that you will make an experiment to filter muddy water and make it clean . Talk about the basic materials of the experiment and ask them to try to guess how this can be possible with these materials. Give appropriate feedback and answer their questions. To get them involved more, explain how the water will be filtered in the experiment. Place the experiment materials on the table with your students: a glass of muddy water, an empty glass and some tissue. Give them necessary instructions when they are doing the experiment. For this purpose, place the glass full of muddy water

on a higher place. Then place the empty glass near the muddy water glass but lower than the first glass. Put one end of the tissue in the glass that is full of muddy water and the other end into the empty glass. Let them observe how water is filtered and cleaned through the tissue and transferred to the empty glass. Tell them to carefully watch the tissue. Explain the process once more if needed. Explain that this experiment is only a simple demonstration of filtering water. Actually, there are more technical processes to sanitize water. Having filtered the water from the mud inside it does not mean it has become drinkable. There are still microorganisms in the water. Some more sanitizing processes are required to make it drinkable. Finish the activity by emphasizing that we have limited sources of clean water, so we should not waste it.

1.3.3 Need for physical activity and learning activities that can be implemented in the class

PHYSICAL ACTIVITY

Although new technologies make life easier for everyone and minimize the need for physical effort it is a well-known fact that our health is under a great risk due to doing less physical activity.

Over the last few decades, sedentary lifestyle has become the most serious problem of the modern people who even do the shopping online. Worldwide, distances that people walk and time spent for physical activities are dramatically dwindling, which lead to spending less energy but still no changes in the amount of calorie intake. As a result, insufficient physical activity has become a key risk factor on personal health as well as increase in weight. Obesity has become one of the most serious public health problems in today's world.

What should be done?

From the early childhood, making the physical exercise a habit and becoming a consistent exerciser and as adults being physically more active is important to keep healthy and prevent health problems in the future.

Which Activities Are Classified as Physical Activity?

Physical activity can be defined as any movement of the body produced by the muscles and joints that require energy expenditure which results in increased heart-beat and breathing, and fatigue. Sports, dances, exercises, games and daily physical activities totally or partly involving the following basic body movements are regarded as physical exercise.

- Walking
- Running

- Hopping
- Swimming
- Cycling
- Standing-squat
- Arm and leg exercises
- Head and body exercises

Benefits of physical activity for child health:

- Helps to maintain a healthy weight.
- Good for cardiovascular health.
- Strengthens bones and muscles.
- Improves balance, coordination and agility.
- Increases flexibility.
- Improves the posture.
- Increases motor skills.
- Improves concentration and cognitive skills.
- Builds up self-confidence and self-esteem.
- Reduces stress and helps to relax.
- Helps to establish better social relations.
- Improves the quality of sleep.

Ways to keep children active:

- If possible, let them walk to the school.
- Encourage cycling and skateboarding.
- Give them the opportunity to dance to their favourite music.
- Introduce them alternative activities that they can do instead of watching TV and using computer.
- Instead of playing regular PC games, let them play console games which are funnier and can make children more active physically.
- Give them opportunities to do their favourite sports.
- Encourage them to take part in school teams.
- Let them have a pet such as a dog, so that they will be active by taking the dog for a walk.
- Remember that you are the best role model for your kids, so before all you should personally become more active physically.
- Find some free time in your schedule to go for a walk, cycling, swimming and etc. with your kids.[11]

11 https://www.iyibeslenmutluyasa.com

PRACTICAL ACTIVITIES

ACTIVITY 9

DURATION	THEMATIC AREA	SUGGESTED MATERIALS
40 min.	Need for physical activity	Envelopes (Minimum 5), marker, appropriate music during the activity

Primary Message	Learning Objectives. Students will be able to:
Being active and doing sports help to keep me healthy	- Recognize that he/she has to be active during the day. - Recognize that doing sports and being active is good for his/her body and also strengthens his/her muscles and bones.

SUGGESTED ACTIVITIES

Select at least five activities to write on the outside of the envelopes. Write only one exercise on each envelope. Suggested physical exercises are: push-ups, jumping jacks, arm circles, seat crunches, elbow touches to the opposite knee, jog in place, forearm jabs, heel raises, hop-scotch. Write different repetition numbers on separate pieces of paper (e.g., one more, 5 more, 10 more, none, times 2, one less, -5, divided by 2, half of it, etc. You can write new variation of repetitions, according to the level of the students.) Duplicate the set of paper on which the repetition variations are written and put one set inside each envelope.

Choose an envelope and state a reasonable number of repetitions. Choose a volunteer and start negotiation. Make a deal with one student at a time. All students participate in each deal (e.g., they can persuade the volunteer student to accept the deal or not)

Tell the student that "My deal is 10 pushups. Deal or No Deal?" The volunteer student: "Deal – all the students in the classroom perform that activity or the exercise." OR "No Deal – the student chooses a card from that exercise envelope and reads it loudly, then all the students perform the new number." For example, if the volunteer student chooses the card "half of it" they do 5 pushups (10/2), or if he chooses "one more" it means they will do 11 pushups (10 your original statement + 1 writ-

ten on the card he/she chose.). During each exercise, explain the benefits of the physical exercises, which muscles are active during that exercise, how physical activities increase oxygen intake, etc.

You can select alternative exercises, activities and repetition variations according to physical availability of your classroom.

ACTIVITY 10

DURATION	THEMATIC AREA	SUGGESTED MATERIALS
30 min.	Need for physical activity & Food Pyramid	Question or task cards for the students, appropriate music

Primary Message	Learning Objectives. Students will be able to:
Being active and doing sports help to keep me healthy	- Recognize that he/she has to be active during the day. - Recognize that doing sports and being active is good for his/her body and also strengthens his/her muscles and bones.

SUGGESTED ACTIVITIES:

Stand Up, Hand Up, Pair Up is an effective activity that you can use at any time during the lesson to motivate, activate prior knowledge, close a lesson or group of lessons, review the topic or the material they have learned and to have fun. The fact that most often the classroom activities do not require any physical activity causes the students get bored and lose concentration. This activity is especially useful when you think your pupils in the class need movement and to be physically active. With that said, in this activity the students are required to walk around the class and find their pairs to do the given task which makes them their own teachers unlike the traditional teaching methods where the teacher is centered. This activity also makes the students feel comfortable as they walk around the classroom and have an opportunity to listen to others' conversations and learn how the task is done. Additionally, for a teacher it is difficult to deal with 20 or more students individually, however in this activity the pupils sometimes get help, feedback and support from their friends and sometimes they coach the others. The important point to keep in mind is you can use this activity almost in every context in your classes. For example you can use it:

- before you introduce new materials to tap their prior knowledge

- to review terms
- use at the beginning of the academic year as a method to review students' knowledge of class rules.
- in maths lesson to review for example, the fractals, shapes, ect.
- to improve weak skills
- to practice new topics or skills.

Before coming to the class, write full sentences about the nutritional values and benefits of the foods listed on the food pyramid. Write one sentence for each pair of students as they will search for the matching half of the sentence on their task card. Erase some words in each sentence to create information gaps which will be the task for the students to find out. Erase the words that you want them to focus on and learn. Also, be careful leaving enough clues to help them find their pairs. You can make it more challenging according to their level.

Example:

Original sentence:
Carrots are rich in vitamin A. It is one of the healthiest vegetables. It improves overall health, especially eye health.

Edited versions for the pairs of students:

Student A's task card:
.....are rich in vitamin A. It is one of ..... vegetables. It improves....., especially eye health.

Student B's task card:
Carrots ..... It is one of healthiest .... especially ..... health.

Other suggestions for original sentences:

- A healthy soul in a healthy body
- Everything seems impossible until it's done
- I wish – I can – I do
- No pain, no gain
- You must earn your body
- If it doesn't challenge you, it doesn't change you
- Don't wish for it, work for it
- Today, do what others do not want to do, so that tomorrow you can do what others cannot do

After writing enough sentences for all pairs in the classroom write them on cards which you will randomly hand out to your students.

Now you have your cards ready for the activity. Start a discussion and brainstorming about the foods on the pyramid. Talk about nutritional values and health benefits of the foods and drinks. Ask questions to improve the discussion and challenge them to think what happens when these foods or drinks are not consumed in sufficient amounts. Alternatively, you can prepare a presentation about the benefits of those foods. When you deem they grasped the messages you want to give hand out the task cards and announce them that they will:

Hand out the task cards and announce them that they will:

- stand up,
- hand up (to show the others that he/she is looking for his/her pair),
- pair up (when they pair up they should work together to find out the information gap. Each student in the pair will complete the missing parts on their cards.)

After you finish the activity, please, do some sport exercises and breath deeply.

No doubt, it will be a little bit noisy during the activity. Walk around and assist those who need help. After all the pairs finish the task, ask them how they worked and found out their pairs. Then, again ask them to read their task cards once more, because they will need that information in the next step. Pick up the task cards and ask them to stand up again and walk around the classroom. While they are walking around ask them questions from the task cards. In the example above, "Which food is rich in vitamin A?" or "Which food is good for eye health?". The students who had the task cards that you ask questions about are supposed to hand up and answer your questions. Make sure you ask two questions, distinct from the other cards, concerning the same card so that the two students in the pair at the beginning will hand up, answer and pair up. The paired students should stay stable shoulder-to-shoulder when they are paired. Follow the same method until all the students are paired up. You can also ask specific questions if you know which task card each student had during the first stage. For example, you can ask direct questions by announcing their names: "Jackson! What is the benefits of carrots? Which vitamin is carrot rich in?".

You can adapt this activity to any context to review any lesson when they need physical activity during the lesson.

ACTIVITY 11

DURATION	THEMATIC AREA	SUGGESTED MATERIALS
30 min.	Need for physical activity	Music

Primary Message	Learning Objectives. Students will be able to:
Being active and doing sports help to keep me healthy	- Recognize that he/she has to be active during the day. - Recognize that doing sports and being active is good for his/her body and also strengthens his/her muscles and bones.

SUGGESTED ACTIVITIES:

Before coming to the classroom prepare a presentation about the importance of doing physical activity for overall health. Also explain what happens in the metabolism during a challenging physical activity. Talk about heart, lungs, muscles, energy consumption, sweating and getting tired. Ask questions to challenge them think about the processes in metabolism. "What happens if there is not enough oxygen when you are doing a challenging physical activity?" "Which organ delivers oxygen intakes? What happens when you play basketball if you do not have enough energy because you didn't have breakfast?". Elicit their responses, give them appropriate feedback and start the activity. Hunt for the best time to do this activity, especially when they feel bored during the lesson and need to be physically active.

The main purpose of the activity is to make the students to get their hearts pumping blood. Before the activity, explain the importance of being careful with the cardiorespiratory fitness and why it is important for people to stay active without losing their breath. Make sure the pupils connect cardio (their heart) to respiratory (their lungs). Demonstrate them the mounting climbing exercise. Tell them to take an upright push-up position and then bend on leg in to their chest while the other leg is extended. Tell them to quickly switch legs so that the leg they were standing on is now against their chest. Repeat it without pausing until you announce them to stop. Has anyone lost breath and stopped before the time is up?

ACTIVITY 12

DURATION	THEMATIC AREA	SUGGESTED MATERIALS
30 min.	Need for physical activity	Floor mat or rugs

Primary Message	Learning Objectives. Students will be able to:
Being active and doing sports help to keep me healthy	- Recognize that he/she has to be active during the day. - Recognize that doing sports and being active is good for his/her body and also strengthens his/her muscles and bones.

SUGGESTED ACTIVITIES:

BREATHE AND LET WORRIES GO

This activity intends to teach students a simple method to let go their worries and how to deal with stress which is an important factor in keeping healthy and fit. Explain them that knowing how to relax is really important as stress and anxiety ruin the metabolism and thus directly affect the overall health. Start the activity when you think the students are bored and need to relax during the usual course of classroom teaching, otherwise it will not be effective. When you think it is the right time, instruct your students to lay down on the floor (mat or rug) and close the eyes. Ask them to breathe deeply to fill the lungs with as much oxygen as possible, then slowly exhale all of the negative feelings, letting go all of the tension and air from their lungs. Have them do the breathing exercise the way you explained them. They can breathe in slowly for counts of seven, then exhale the air for counts of seven. Instruct them to put their hands on the abdomen and feel it rise up and down as they breathe. After doing the exercise nearly about 10-15 minutes, ask them how they feel. Discuss how they can do this activity every day to feel calm, refreshed and get rid of worries to relax.

ACTIVITY 13

DURATION

30 min.

THEMATIC AREA

Need for physical activity

Primary Message	Learning Objectives. Students will be able to:
Being active and doing sports help to keep me healthy	- Recognize that he/she has to be active during the day. - Recognize that doing sports and being active is good for his/her body and also strengthens his/her muscles and bones.

SUGGESTED ACTIVITIES:

This activity is intended for the primary school students especially for those at 4th and 5th grade. The grades of primary school students may be different in each country. The important point for this activity is that the students should have something to reflect on and discuss while walking in groups during the breaks or even during the lesson dedicated for this activity.

Form groups of students with no more than 4 people in each. Tell the students that they will walk together for this activity. While they are walking, the students are supposed to share the new information or topics which they have learned in the current class or, alternatively, review the topics from yesterday's class. You can select a topic or the things to be discussed according to the type of the session you are teaching. Explain them that the rules are super easy to follow. First, share at least one topic or thing that you remember from the class or something that they have learned today. If you want to have something more specific to be discussed, you can a list topics or questions to be discussed by them. Let them go out of the classroom to have a walk outside if available. If not, let them walk inside the school building. Tell them they should come back in 10 minutes (you can change the duration for the walk as required). Be strict and punctual about the time. You can use a certain signal such as a song or signal to tell them they should return to the classroom. When they return to the classroom, give them 5 minutes to write and reflect what they want to remember from the walk. You can give them more time, it depends on your schedule or intended purposes, or extend the topics and let them discuss inside the classroom and reflect more. Alternatively, you do this activity at any time for any topics they are studying or have studied.

1.3.4 Educational activities that encourage students to reflect upon their eating habits

Undoubtedly, during the school ages physical and mental development of students should be carefully watched and supported, so that they will have healthy eating habits, hence a healthy life in the future.

The scientific data shows that malnutrition of children results in shorter attention span, decrease in cognitive skills, learning difficulties, behaviour disorders, increased school absenteeism and lower school achievement.

Therefore, parents should not only focus on their kids' school achievement but also parents should carefully observe their growth and development and promote healthy nutritional habits by becoming a good role model.

Both parents and teachers are responsible for teaching the children the basic nutritional rules, having them develop appropriate nutritional habits, responding to their wrong nutritional habits and being a good role model. Teachers should:

Organize various learning activities (quiz games, classroom newspaper, nutrition bulletin board, etc.) on adequate and balanced nutrition and create an environment for the students to discuss it.

Always check whether the students eat breakfast at home or not, and also warn them against consuming street food sold around the school.

Guide the parents to prepare the lunch bags according to the menus recommended by the Ministry of Health and regularly check the contents of the lunch bags.

Work in cooperation with the parents and promote consuming cheese, eggs, fresh vegetables and fruits, milk, ayran, fresh-squeezed fruit juice instead of unhealthy foods and drinks such as fried potatoes, chocolate, fizzy drinks and other store-bought drinks.

Regularly monitor the height and weight gains of children to assess their growth and development. http://beslenme.gov.tr

Recommendations for Improving the Eating Habits of Children

- A well-planned and regular dietary program is usually the best option for many children.
- Meal times should be as pleasant as possible for the children.
- Children should be allowed to choose their own food.
- Snacks planned at specific times during the day may help promote healthy foods and drinks for children.

- A really important point is what a child eats during a few days not at one meal time.
- Eating habits of children will be improved unless main meals and snacks are scheduled unpleasantly. http://beslenme.gov.tr

You can find the example classroom activities related to Food Pyramid at the end of this chapter.

PRACTICAL ACTIVITIES

ACTIVITY 14

DURATION

40 min.

THEMATIC AREA

Encouraging pupils to reflect upon their eating habits

SUGGESTED MATERIALS

Poster of world map, world cards, food visuals, plastic white bags, markers

Primary Message	Learning Objectives. Students will be able to:
Nutritional habits of people living in different parts of the world may be quite different.	- Recognize that nutritional preferences may vary depending on various reasons such as culture, health status and body built. - Express that people living in different parts of the world have different nutritional preferences and habits.

SUGGESTED ACTIVITIES:

Note: *One day before the activity day, print out "How much water do I drink?" activity page and hand out to all students. Ask them to colour a glass figure on the activity page for each glass of water they drink during the day. Also ask them to bring this activity page to the classroom the next day. As you will work on creating own healthy food plates the next day: 1. You can print out visuals of foods and drinks or bring magazines, newspapers, cooking magazines, etc., to give them for the activity the next day or 2. Hand out markers to draw their foods on the plastic disposable white plates.*

Now, on the world map, given in the annexes of this e-book, show your students that people in different parts of the world have different life styles and clothing as well as different nutritional habits. Ask which of the foods on the world map they know and which of them they consume most.

Continue the activity with the question "Why do people in different parts of the world eat or drink different foods and drinks?" Hand out the "World Cards" showing different foods consumed in different parts of the world and let the students review them. On the front side of each card there is a picture of typical food peculiar to a country and similarly on the back side of the same card there is a picture of a child in traditional clothes and name of the food peculiar to another country, not the same country as on the front side of the card. Ask one of your students to stand up and show that card to other students. The student who has the same picture on his/her card raises hand, now this new student shows the card to other students, and so on. Each student holding the corresponding card tells his opinion about the food on his/her card. For example: "It looks tasty, It is looks different, I would like to taste it, I think it is healthy, etc.".

Now, put the food visuals on the table and invite everyone to create their own food plates. Alternatively, if you do not have food visuals, you can ask them to draw the food on the plastic white plates by using markers. Make sure that they put or draw the foods that they usually eat. Once everyone finishes, first let them compare their plates with their peers'. Ask questions such as "Which plates are full of healthy or unhealthy foods? Does everybody prefer the same foods? Why are there different foods on the plates?" Secondly, let them compare their food plates with the foods people who live in different parts of the world (Show them the World Map, available in the annexes). Ask them questions such as "We usually eat these foods but they eat different foods, why?" How about the ingredients in our and their dishes? Are they the same? At the end of the activity let them make a self-evaluation and reflect and share their own nutritional habits with their classmates. To enhance learning, start a classroom discussion by asking the question "We eat different foods. The variety of the foods we eat depends on some factors. What are these factors?".

Divide your students into groups and ask each group to search for the nutritional habits in different parts of the world. You can form the groups as follows:
Group 1: Italy and Spain
Group 2: America
Group 3: Sweden, Norway
Group 4: Ethiopia

After the research, each group can prepare a presentation about the nutritional habits of the people living in the country they chose. You can start a comprehensive classroom discussion about the reasons behind the differences in nutritional habits of countries.

ACTIVITY 15

DURATION	THEMATIC AREA	SUGGESTED MATERIALS
40 min.	Encouraging pupils to reflect upon their eating habits	My food diary card, world cards

Primary Message	Learning Objectives. Students will be able to:
Nutritional habits of people living in different parts of the world may be quite different.	- Recognize that nutritional preferences may vary depending on various reasons such as culture, health status and body built. - Express that people living in different parts of the world have different nutritional preferences and habits.

SUGGESTED ACTIVITIES

One week before the lesson, ask your students to take notes about what they eat or drink during the week using the "My Food Diary" activity page which you print and hand-out. One week after the initial request you can start the activity by asking which foods they ate most, which ones they liked most, when they felt hungry during the day and what they felt when they did not eat.

Start group conversations and let them talk with each other, so that they will recognize intervals between eating and drinking and also what and when they eat or drink during a week. Explain how important nutrition is and emphasize its role in healthy growth and prevention of diseases.

The discussion which is triggered with the question "Not all of us have same food preferences. Our food preferences are sometime quite different than the other people's preferences. What is the reason of this?" engages the entire group of students into the activity. Using the "World Map" poster, show the students that people in different parts of the world have different life styles, clothes and nutritional habits and preferences. You can alternatively do the same activity using the map of your country; in this case you can talk about the different regions in your country.

Drama: In this activity students can be assigned to present a drama task or a project performance. Form four groups of students for this purpose. Each group represents different regions in your country. This activity will enable students to recognize the life styles, clothes, cultures and especially the nutritional habits and cuisine of people living in those parts of your country. Each group

makes their presentation or talk about the region that they are assigned. Try to have all the students grasp the idea by the end of the activity that "All of us are unique. We have different lives and opportunities. Our body built is differently, that is why we should eat adequate amounts of foods in a balanced manner in order to be healthy."

You can use the cards designed for your country or the "World Cards" for the next activity.

First show your Country Cards and ask which dishes or foods are there on the cards. Ask them if they cook these dishes at home or would like to cook. Then, show the World Cards and ask the names of the dishes on the cards. Finally, explain them that the ingredients in these are essentially very similar although their names are different.

ACTIVITY 16

DURATION

40 min.

THEMATIC AREA

Encouraging Pupils to Taste New Things

SUGGESTED MATERIALS

Real foods and drinks (or visuals of foods), plates for each meal, labels for breakfast, lunch, dinner and snacks, eye-blinders (ribbon).

Primary Message	Learning Objectives. Students will be able to:
I should have a balanced and adequate diet with foods listed on the food pyramid	- Recognize that he/she needs different nutrients according to the time of the day.

SUGGESTED ACTIVITIES

This activity intends to enable children to recognize that they should eat adequate amounts of all foods at the right time.

To start the discussion, ask the students why we prefer different foods for different meals. For example, "why don't we have toast for dinner? Why don't we eat roasted chicken for breakfast?" Elicit their answers and give appropriate feedbacks. During the discussion, emphasize the importance of choosing the right foods and drinks according to the meal as our nutritional needs are different at different times of the day because human metabolism needs different nutrients for different activities. For example, right before

going to bed eating indigestive foods such as beef or roasted chicken is not good for health and explain why. After emphasizing the importance of timely manner in eating, invite them to the table on which you placed all types of foods mixed (if not applicable, you can alternatively put visuals of foods and drinks on the table). Put plates and labels for breakfast, lunch, dinner and snacks. Ask them to group the foods (or the visuals) as foods for breakfast, lunch, dinner and snacks. Give appropriate feedback and explain why we should have a timely manner in nutrition. Work with them while they are grouping different foods and explain which of the foods we should eat for breakfast, lunch and dinner or at different times of the day. Help them recognize which foods or snacks they should eat at different meals or during the day for a healthy and active life.

If you have done this activity with real foods, now it is a good opportunity to play a simple tasting game which encourages them to taste new things. The basic rule of this game is that students close their eyes and taste a food given by another student in their group. Group the students into two for this purpose. Let them choose a name for their group, for example carrots and apples (give appropriate feedback to have them choose a healthy food name). Write the names of the groups on the board and announce that each correct answer is worth 10 points. The group which scores 100 points first wins. While one group is active the other group watches, so the first group starts choosing, one student will taste, the other one will give the food. If the student (eyes closed) correctly guesses the food that he/she tasted his/her group gets 10 points. The game goes on this way until one of the groups reaches 100 points.

If you have done the grouping activity with visuals of foods, you may still play the same game above with some different changes. In this case, the only difference is that the students do not taste real foods, but they try to guess which food it is when his/her friend tells about the food. All other rules apply except tasting.

ACTIVITY 17

DURATION	THEMATIC AREA	SUGGESTED MATERIALS
40 min.	Encouraging students to reflect upon their eating habits	Food cards

Primary Message	Learning Objectives. Students will be able to:
I know healthy and unhealthy foods.	- List healthy and unhealthy foods. - Select healthy and unhealthy foods.

SUGGESTED ACTIVITIES

The aim of this activity is to have pupils reflect upon their eating habits through a mini memory game. It is based on the correctly remembering what others said about the foods when the game leader shows them food cards.

The game leader shows food cards one by one, the students raise fingers if they like that food or not, and also if it is a healthy or unhealthy food. The important point here is the students express their opinions in a free style and with an exclamation. Tell them the basic rules:

- When you show them a food card, one of the students raise finger and says what he/she thinks about that food with an exclamation, "Ohhh! Pizza! I like it very much but it is not very healthy", "Fish! Hmmm I like it because it is healthy!", "Lemon! I don't like it but it is really healthy!"

While a student is expressing his/her opinions the others should approve or disapprove it according to the common nutritional facts. For example: when the student says "Fish! Hmmm I like it because it is healthy!" the others should say "Yessss! Fish is healthy". The more students express their opinions the more difficult it becomes to remember what a student said about a certain food card. After a while, when you show them the fish card ask them who talked about fish? At this point the students should remember the name of that student. If they can correctly remember the name, ask them what did he/she say about it? When they answer your question, shortly talk about that food "Yes, it is really great and good for health". When you show them several cards, leave the cards on table and let them show the food cards by themselves. Join them as a member of the group and raise a finger when you see a food card. Finally, the student who correctly remembers what others said about the food cards receives 10 points for each correct answer. The students who has the highest score after all the food cards are shown wins.

ACTIVITY 18

DURATION	THEMATIC AREA	SUGGESTED MATERIALS
40 min.	Encouraging students to reflect upon their eating habits	Fresh bread, fresh and stale eggs

Primary Message	Learning Objectives. Students will be able to:
I know healthy and unhealthy foods.	- List healthy and unhealthy foods. - Select healthy and unhealthy foods.

SUGGESTED ACTIVITIES

Bring fresh and stale bread to the classroom. Ask students to touch and to smell the bread. What is the difference between the breads. Again, ask the students "Why did bread become stale?", " "Does eating stale foods have hazards for health?", "What should we check when buying food from the market or the stores?". Emphasize that checking expiry dates of foods, the ingredients and their order in the list (as the bigger amount of ingredient is always at the beginning of the list) is important. Show cards to students about fresh and stale foods. Ask them which are fresh or stale. Form four groups of students. The groups will be called as fresh fruits, stale fruits, fresh vegetables and stale vegetables. The groups review the pictures and choose the ones that belong to their group. After that, go to the science table and add salt into two glasses of water. Put the eggs into the glasses. Explain them that fresh eggs sink into the water, while stale eggs float. Let them observe the eggs in the glasses and explain which one is fresh or stale. Tell them that fresh eggs are heavier than the stale ones. Explain them that the more stale the egg is the lighter it becomes.

Next, let them taste fresh and stale bread. Ask them what is the difference between two types of bread and if it is possible to save some foods before they become too stale to eat or not. Elicit their responses and give appropriate feedback. You should be hunting for someone to talk about making meatball or desserts with stale bread. If anyone talks about it do not miss the opportunity, otherwise ask them if it is possible to make meatballs with stale bread. Tell them the answer is YES. Announce that you will do a short drama action on how to make meatballs:

We are meatballs (Drama):

- 6-7 of the pupils lay on the ground and come closer to play the role of beef in the meatball.
- Some other students also lay on the ground among their friends to play the role of bread, oil, salt and pepper. Two students, a cook and his/her assistant change the places of their friends to blend the ingredients of the meatballs.
- Now each person on the ground is a meatball. The cook and the assistant place them in a virtual pan.
- They virtually put the pan on a cooker or stove.
- "OK, they are almost fried" say the cook and the assistant. Then, they turn the meatballs to fry on the other side of the meatballs.
- Finally, they put the fried meatballs on virtual plates. They serve the meatball to their peers in the classroom to taste. After tasting, they ask what they think about meatballs.

In this period, let them express their opinions about how it tastes, if it is a good way to prevent the waste of foods. It is a good opportunity to talk about that all the foods are worth tasting and how valuable food is. As an educator reinforce the topic and express your opinion about it.

1.3.5 Encourage pupils tasting new things

One of the most difficult challenges, sometimes beyond a challenge, that parents have today is getting their children to taste new things. Healthy foods give children energy, vitamins, anti-oxidants, fibre and water that they need to protect their bodies against diseases. Healthy nutrition does not only mean eating certain kinds of healthy foods but eating a variety of foods from the main food groups. The fact that a healthy life in adulthood and later periods of life is possible if individuals have adequate and balanced nutrition during the childhood makes it a crucial task for the parents, so it is important to help your kids enjoy tasting new things. In the following pages you can find examples of classroom activities which you can use at home or in your class to encourage kids to taste new things which is often a big hurdle at the gateway of a healthy life.

PRACTICAL ACTIVITIES

ACTIVITY 19

DURATION

40 min.

THEMATIC AREA

Encouraging students to taste new things

SUGGESTED MATERIALS

Bags, small containers, food or ingredients which have stroing natural aroma

Primary Message	Learning Objectives. Students will be able to:
I should have a balanced and adequate diet with foods listed on the food pyramid	- Recognize that the foods in the food pyramid should be consumed in different amounts. - Express that for a healthy life we need to eat all types of foods.

SUGGESTED ACTIVITIES

The teacher puts aromatic foods (coffee, lemon, basil, parsley, mint, etc.) in different bags.

Students try to guess the content of the bags by touching and smelling, then pass the bags to other students for the same purpose.

Now, students draw pictures of the foods that they guessed. The pictures are exhibited in the classroom.

The foods, the same as in the bags, are served in small containers (plates) for the students.

They count the bags and containers.

They match the bags and containers (plates) according to their smell. They open the bags to see if their matching is correct or not.

After this activity, the teacher brings different foods with different aroma and flavour in closed containers. He/She covers the eyes of a student and asks him/her to taste the food chopped in small pieces. The students are supposed to guess the name of the food that they taste.

You can ask the following questions after the activity:

What have we done in this activity? How did you guess the food in bags? Which food was the easiest to guess? Which foods do you think have similar smell? Is there any food you tasted for the first time? Which foods do you think have a bad smell?

ACTIVITY 20

DURATION

40 min.

THEMATIC AREA

Encouraging students to taste new things

SUGGESTED MATERIALS

4 apples, ¼ cup eco peanut butter, ¼ cup granola, ¼ teaspoon ground cinnamon (for sprinkling), to make the top nicer you can use melted dark chocolate (which has more than 70% of cocoa) hich have stroing natural aroma

Primary Message	Learning Objectives. Students will be able to:
I should have a balanced and adequate diet with foods listed on the food pyramid	- Recognize that foods in the food pyramid should be consumed in different amounts. - Express that for a healthy life we need to eat all types of foods.

SUGGESTED ACTIVITIES

PEANUT BUTTER GRANOLA APPLE BITES

>RECIPE

This activity intends to have students taste new things by means of preparing their own foods. Before activity talk about hygiene rules that they should pay attention to. Ask them to wash their hands then put the ingredients on the table. Ask them to crumble the biscuits into the deep bowl. Then let them:

- peel 1 apple (you can use a safe plastic knife), take the seeds out and then cut into small cubes;
- cut 3 apples into 2 pieces each and takes the seeds out;
- iif you have safe kitchen utensils, have them grate the apples on their own, otherwise do it yourself;
- fill the apple sides with peanut butter and cubes of apple and sprinkle with granola and cinnamon;
- melt chocolate;
- drizzle prepared snacks with melted chocolate;
- place on plates and serve.

After students taste the meal, ask them about how they felt during the preparation process, why the hygiene rules are important in food preparation, other delicious alternatives that can be tried in the classroom.

ACTIVITY 21

DURATION

40 min.

THEMATIC AREA

Encouraging students to taste new things

SUGGESTED MATERIALS

For 1st recipe: milk, powdered sugar, organic cocoa powder, dash salt, vanilla, lemon or tant orange.

Primary Message	Learning Objectives. Students will be able to:
I should have a balanced and adequate diet with foods listed on the food pyramid	- Recognize that the foods in the food pyramid should be consumed in different amounts. - Express that for a healthy life we need to eat all types of foods.

SUGGESTED ACTIVITIES

This activity primarily aims to encourage students to explore and taste the basic tastes through the senses: sour, sweet, salty and bitter. If you manage to make both sweets, you will be also able to discuss the quality of chocolate, ingredients and compare the tastes.

Prepare a homemade hot candy using the 1st recipe below:

- 4 cups of milk
- ½ cup of powdered sugar
- ¼ cup of cocoa powder
- dash salt
- 1 teaspoon of vanilla
- lemon or tant orange

Or homemade raw chocolate using the 2nd recipe below:

Actually, as it was said by Precision Nutrition community member Kaisa: the type of chocolate we benefit from is not the milk chocolate stuff many of us call "chocolate." That's actually "candy." The type of chocolate we can benefit from is the really rich, high quality, low sugar chocolate that contains 85% or more cocoa.

Therefore our suggestion is to try to make raw chocolate.

- ½ cup cocoa butter
- ½ cup virgin coconut oil
- ½ cup (raw) organic cocoa powder
- ¼ – ½ cup agave syrup for sweetening
- organic honey, stevia or raw cane sugar okay too; or you do not have to use any sweetener at all

However, if you want to jazz it up a bit, here are some ideas for what you can add to one or another (or both) recipes.

- goji berries
- dried berries
- raisins
- dates, chopped
- crushed nuts, almonds, seeds
- chili powder
- maca
- green tea extract
- carob
- or anything else you like!

For the 1st recipe: simply mix and blend all the ingredients in a hot chocolate maker or alternatively put them altogether in a pot on a stove and stir until it becomes warm enough.

For the 2nd recipe: (1) Grate 1/2 cup of the cocoa butter. It will melt easier when it's grated. Measure a 1/2 cup of coconut oil. (2) Place cocoa butter and coconut oil in a water in a small, heat-safe cup or bowl. Then place the cup or bowl in a shallow pan containing a small amount of warm (not boiling, but nearly) water. Stir the oil and butter occasionally until it is smooth. (3) Measure ½ cup cocoa powder. If you would like to add any other dry ingredients, measure them out now and stir them together with the cocoa powder. (4) Pour the dry ingredients in the bowl with melted oil and butter. Stir continuously until smooth. (5) If you want to sweeten your chocolate, pour 4-6 tbsp of agave nectar into the mix and stir. If not, skip this step. (6) Have someone check the quality. Meaning... go ahead and check if the chocolate is sweet enough. You can also add the rest of the additions at this point, like chili/cayenne, dried fruit, nuts etc. (7) Pour the melted chocolate on a pan / plate / ice cube tray. You can also throw some of the additions on top of the chocolate, it looks nice. Place the chocolate for 30 minutes in the freezer or 60 minutes in the refrigerator. Take it, taste it and enjoy!

The source of the 2nd recipe: https://www.precisionnutrition.com/chocolate-making

You can explain to students that the cocoa powder itself is quite bitter, but it is better to let them learn it in the old style: experience and learn. Add some powdered sugar, cocoa and salt onto the students' plates. At this point you have the three of four basic tastes. Now, it is time to add some

sour taste into your recipe by simply peeling some lemon or tart oranges. Let them taste it and tell to put a small piece of your chocolate and tell what kind of taste they experienced. They usually respond Woow it is sweet, no Bitter, no Salty...

To go a step further, you can plug the noses and eyes. When the nose is blocked and eyes are blindfolded the taste almost disappears as these two senses make a very big part of tasting. Start a discussion to let them reflect upon their experience, what they think about the other senses involved in tasting and enjoying the foods and how the tastes of foods may change when they are combined. Emphasize that each food is worth trying. Knowing the taste of something is impossible without trying.

ACTIVITY 22

DURATION

40 min.

THEMATIC AREA

Encouraging students to taste new things

SUGGESTED MATERIALS

The foods listed in the activity section

Primary Message	Learning Objectives. Students will be able to:
I should have a balanced and adequate diet with foods listed on the food pyramid	- Recognize that the foods in the food pyramid should be consumed in different amounts. - Express that for a healthy life we need to eat all types of foods.

SUGGESTED ACTIVITIES

Organizing a food taste is a fun method to give pre-schoolers the taste of different foods, however it is often a challenging adventure to have them try new foods and associate them with basic tastes: salty, spicy, sour, bitter or sweet. It becomes even harder to entertain them when they are offered different tastes. For the tasting activity, selecting the foods together with your kids may help and prepare a creative tasting test fort them. You can change, add or delist the foods below if required.

Sweet: banana, honey, raisins, chocolate, fruits, berries
Sour: lime, lemon, not well riped apple or berries, wood sorrel or sorrel,

Salty: crystals of salt, potato chips, salty crackers, naturally pickled cucumber,
Spicy: salsa, chilly
Bitter: raw cacao powder, baking chocolate, horseradish, mustard

Put all the foods in different containers. Talk about different combinations of taste, simply explain that not all foods have just one taste, for example something is not necessarily only sweet or spicy, it can have both tastes at the same time. Food could be both sweet and spicy or salty and sour, etc. To be a role model, taste some of the foods you offer and reflect what you think about it. Avoid insisting on them to taste certain foods, if they refuse just skip and go on with another food. After each food they taste let them talk about their tasting experience. Ask questions "How does it taste? Did you like it? Did you feel the sour taste of lime? Sweet, salty, spicy, or sour?". Elicit their responses and give appropriate feedback. To go one step further, you can do the same activity with lunch or dinner foods. Follow the same way to have them taste different foods.

ACTIVITY 23

DURATION

40 min.

THEMATIC AREA

Encouraging students to taste new things

SUGGESTED MATERIALS

Butterfly pictures, "The very hungry caterpillar" story book, fruits and foods listed in the activity, round cookie cutter

Primary Message	Learning Objectives. Students will be able to:
I should have a balanced and adequate diet with foods listed on the food pyramid	- Recognizes that the foods in the food pyramid should be consumed in different amounts. - Express that for a healthy life we need to eat all types of foods.

SUGGESTED ACTIVITIES

Show them photos of butterflies and their mutation adventure from a caterpillar to a butterfly. In a funny mood, story-like tell them how hungry caterpillars turn into beautiful butterflies! Explain them that you will together combine this story with a tasty activity. Search for the full text of the

"The very hungry caterpillar" story. If available, read the story together with kids and start your activity. If not, below is a short summary of the story.

One Sunday morning, a red-faced caterpillar hatches from an egg, and begins to look for some food. He eats increasing quantities of fruit on the following five days: one apple on Monday, two pears on Tuesday, three plums on Wednesday, four strawberries on Thursday, and five oranges on Friday, and then, on Saturday, he has an enormous feast with one piece of chocolate cake, one ice-cream cone, one pickle, one slice of Swiss cheese, one slice of salami, one lollipop, one piece of cherry pie, one sausage, one cupcake, and one slice of watermelon. By the end of Saturday, the inevitable happens and the caterpillar gets ill with a stomach ache from over eating too much. On Sunday, he recovers from a stomach-ache and returns to a more sensible diet by eating through a large green leaf before spinning a cocoon in which he remains for the following two weeks. Later, the "big fat caterpillar" emerges as a beautiful butterfly with large, gorgeous, multi-coloured wings.

To adapt this story into a funny activity for your students use the following ingredients.

- Sugar Cookie Dough (you can buy it from a store or make your own)
- Red and green frosting
- Apple, Pear, Plum, Strawberry, Orange
- Small circle cookie cutter
- Small pretzel sticks

Roll out the cookie dough and make 6 round cookies for each caterpillar. After baking the cookies set them aside to cool. If you buy the cookies from a store continue with the next step. Chop the fruits into small pieces. We suggest you cut the fruits into two halves. Chop one half of each fruit for making the fruit pizza and slice one half of the fruit for eating while you read the story with your students. Put the six round cookies next to each other like a caterpillar. Let the kids colour the cookies by spreading the red and green frosting. The first round cookie at the one end of the caterpillar should be red to make it look like the head. The other cookies should be coloured with green frosting. Make shapes from the fruits to make its eyes, mouth and antennas or simply use the green frosting to make face of the caterpillar, red background, green eyes, mouth and antennas. Have the students decorate the cookies with the fruits and foods they chopped. They can decorate each cookie with one or mixed fruits and foods. Leave it to the kids to do it the best way they like it. After finishing the cookies, read the story again and eat the caterpillar cookies together!

2 PARENTAL ENGAGEMENT MATTERS

2.1 INTRODUCTION

Child dietary behaviour is determined in part by individual factors like food preferences and socio-cultural and environmental factors like nutritional traditions and country specifics in geographical location, but parents are a significant factor in securing better nutrition in the eating process of a child. Parents can influence the diet of their kids by providing their children with the ability and opportunity to make healthy or unhealthy choices through the selective use of food in parenting practices. In this chapter we regard the importance of parent involvement in nutrition education, also the reasons of the lack of such involvement and some approaches for family and teacher collaboration in favour of healthy eating of children.

2.2 WHY FAMILY INVOLVEMENT IN THE LEARNING PROCESS IS IMPORTANT?

The achievement of good results in the educational process depends to a great extent on the teacher – his/her activity, his/her way of teaching and communication with children, his/her personality and character. It is expected from him/her to be an authority in the role of a mediator, manager, encouraging and supporting the individual skills and abilities of a student. However, teachers are not the only ones responsible for the education and training of children - their responsibility is no greater than that of the family.

Parents are the ones who create environment for intelligent, full and responsible development and health of young people. Human personality and habits (hygiene, nutrition, motor, etc.) are built at an early age, when the figure of the teacher is not yet present in the brains of children. The participation of the family in the educational process of their children is directly related to the motivation and aspirations of children towards knowledge as well as the quality of the education they acquire. Parents' involvement in their child's learning process offers many opportunities for success- improvements on child's morale, attitude, and academic achievements across all subject areas, higher attendance rate at school, behaviour and social adjustment (Centre for Child Well-Being, 2010) Therefore, building good and effective relationships and maintaining good communication between parents and teachers is crucial to provide and acquire quality education for children.

When the family takes an active part in the education process of their children, they have a better understanding of what and how is taught at school or in a kindergarten, what programs (including those related to health and healthy eating) and services are offered, - better awareness of the knowledge and abilities of their children[12]. Opportunities for parents to participate in the process of educating children mean opportunities for healthy children, families and communities.

12 http://www.projectappleseed.org/barriers

If we analyse the researches made by Joyce L. Epstein - a research professor of education and sociology at America's first research university, Johns Hopkins University, and director of both the Center on School, Family, and Community Partnerships and the National Network of Partnership Schools – we will find a lot of very useful information. Her research focuses on how leadership at the district and school levels affects the quality of a school's programs on family and community involvement and on results of students. In all of her work, she is interested in the connections between research, policy and practice**. According to J. Epstein and her colleagues from Johns Hopkins University, there are six types of community's involvement:**

» PARENTING. This category includes the basic responsibilities of families such as providing housing, health care, nutrition, clothing, and safety, and creating home conditions that support children's learning (e.g., purchasing necessary books and other school supply, provid-

ing a place to study, etc.). Parenting also implies that parents are warm and responsive to their children, communicate with them and support their development.

» **COMMUNICATING.** This type of involvement concerns the basic responsibilities of schools, including establishing two-way communication between family and school. This type of involvement assumes that schools keep parents informed about school matters by sending newsletters or report cards, calling, e-mailing or visiting parents, etc. In addition, parents can also address their concerns to the teacher or school administration both through contacting them directly and through correspondence.

» **VOLUNTEERING.** According to Brent (2000), the term "volunteer" usually refers to persons who devote their spare time to work on a routine basis without monetary compensation, usually under the direction of a school employee, in support of educational activities and school operations. He clarifies, however, that parental engagement in PTA, PTO or other types of decision-making organizations involving parents, teachers and, perhaps students and other community members, is not volunteering (Lunts, 2003).

» **LEARNING AT HOME.** This type of involvement suggests that parents are involved in curriculum-related activities occurring at home (e.g., assisting with homework, discussing books with their child, brainstorming ideas for school projects).

» **DECISION MAKING.** Parents who are involved at this level advocate children's interests. These parents often participate in advisory councils and committees.

» **COLLABORATING WITH THE COMMUNITY.** This type of involvement relies on understanding that helping the community is the best investment. It assumes that different types of community organizations contribute to schools, students, and families.[13]

Some parents initiate contact with the school or the kindergarten themselves and thus the educational institution has no difficulty in reaching these families. Others, however, never interact with the institutions that educate their children, especially when the school/kindergarten does not work hard to encourage such engagement. Unfortunately, in the educational reality, the most commonly practiced forms of interaction and communication between school/kindergarten and family cannot always be defined as effective and efficient. Trust in the relationship between them is also disturbed. In the mass practice, the two institutions sporadically and as if unwillingly contact, but hardly this can be called co-operation.

School and family are moving in different orbits.[14] CCommunication consists of notes to the parent, recorded in the student's notebook, parenting meetings, telephone conversation or desire and invitation to parents visit the school or the kindergarten. The lack of participation of families in the

13 https://projects.ncsu.edu/meridian/win2003/involvement/2.html
14 http://pedagogy.swu.bg/wp-content/uploads/2012/03/Popkochev_T_Colaboration.pdf

learning process is dictated by the existence of a number of barriers raised by both families themselves and educational institutions. Part of them stems from the lack of sufficient resources, others from different beliefs, perceptions and attitudes on the part of parents and school staff.

2.3 REASONS FOR THE LACK OF FAMILY INVOLVEMENT IN THE LEARNING PROCESS

It is difficult to address any specific reasons for the lack of parental engagement on its own without putting it in the context of overall parenting behaviour but still identifying some major issues in the engagement process can help teachers to more easily attract families to school or to kindergarten and motivate them to cooperate for the common good of children.

The most common reason of lack of family involvement in the learning process is the **lack of time**. This is particularly true for working and/or single parents as well as for those who have more than one child. When both parents work, it is harder for them to find time to spend on school or kindergarten visits. The economic situation today places many families in financial difficulties. The lack of sufficient and secure incomes to provide household support is the reason for many parents to have more than one job. However, this active employment is at the expense of time spent with the family. In such situations, parents lose the opportunity to report what changes happen around them and find it difficult to find the right approach to educating their children.There are few cases in which teachers also do not have enough time. They consider family involvement as an additional task to the task list already filled with responsibilities for children.

Negative attitudes also influence family engagement in children's education. There are families who worry that they are not well received in the school, the kindergarten of their children, others do not like the educational institution itself and everything that happens there. Most often, such opinions are the result of a negative experience with a kindergarten or school from the time they were small, or with kindergartens or schools that their children visited in the past.

Teachers also have their concerns: some of them think that parents cannot help their children because they have not received good education themselves. This is a misconception, however, as many uneducated parents support learning, talk to their children about the kindergarten, school, watch how they handle their homework, help them realize that education is important to them.

Lack of self-esteem - parents' inadequate knowledge and understanding of rules, curriculum and teaching methodology can be a serious barrier to communicating with teachers. Lack of confidence is also often due to poor self-assessment of parents themselves due to the lack of sufficient edu-

cational competence. According to their own ideas, they have nothing to offer to the school/kindergarten to help their children effectively.

Social differences also "kill" the aspiration of parents to be an active party in the education of their children. For some, those who are physically or mentally disabled, have a disability or do not have a supportive social environment, it can really be very difficult to get involved effectively.

Due to **cultural differences**, many migrant parents or parents living in deprivation have only a bare idea of what is happening in the kindergarten or school of their children, and in a few cases they are completely detached from the learning process. This is due to their firm belief that they do not fit or do not meet the standards of the educational institution and therefore avoid contact with it.

Many families have **low expectations**; they do not see the benefits of attending school or kindergarten, or think that it would not lead to any significant change in the education or achievements of their children. Others do not have high expectations regarding education as a whole, and, as a result, they do not see the point of being involved.

However, serious difficulties in the relationship between the family and the educational institution cannot outweigh the overall goal pursued by both parties and the achievement of which is a good cooperation. For parents, children are undoubtedly a key priority - their future development and building as full-fledged individuals. For teachers, it is undoubtedly a priority to implement the professional duty and the responsibility they have to bear before children, parents and society as a whole. Achieving effective cooperation between them is a truly complex and lengthy process that requires effort, diligence and understanding from both stakeholders. There are different forms of productive interaction between family and school/ kindergarten, which we will introduce in the next part of this methodological book.

2.4 NEW APPROACHES FOR FAMILY AND TEACHER COLLABORATION IN FAVOUR OF HEALTHY EATING FOR CHILDREN

In order to involve families more effectively in school or kindergarten activities and to improve cooperation between teachers, parents and children, it is best for families to be thoroughly informed before any event or initiative that an institution takes. It is desirable that this notification be made in advance, leaving parents enough time to react and engage with specific support actions. It is important that parents do not receive specific instructions on how they can get involved in order to feel free to offer their help in the most appropriate way - in terms of skills, knowledge and leisure

time.

Good practices for parent involvement include organizing sports events involving parents, teachers and students in general games and food discussions and how healthy food gives us energy throughout the day. Parents can also be involved in various healthy eating games and events - for example, in preparing different foods to treat children, helping children with artistic presentation of healthy food, offering healthy recipes, helping children with various costumes and scenes. Some good practices for engaging families in the work of schools are given below:

Using a theatrical approach for organizing events with families on the topic of healthy nutrition:

- Using different theatrical techniques children, teachers and parents can shape different stories and tales; get to know different perspectives;
- Enter different roles;
- Learn about each other;
- Work together.

An example using the theatrical approach could be for teachers and children to shape the story of healthy eating and to choose different roles for both children and parents - to be different types of food, water and other beverages, organs in the human body. Then children should learn about "themselves" - the type of food, how this food affects the body, what is good for the body or why it is bad; together with parents, kids can create a suitable suit.

Organization of outdoor activities, which are extremely suitable for engaging families in school events. Such activities can be:

- Picnics in which parents, together with children, prepare food and try different healthy recipes;
- Sports celebrations in which physical activity is combined with a healthy menu;
- Excursions to farms, vegetable or orchard gardens in which children learn about the origin of food, the ways in which they are grown and how they reach our homes;
- Setting up a private garden in educational institutions for children and parents to look after it.

Organizing indoor activities (in the school or the kindergarten):
These activities should be implemented with imagination and attention to the inclusion of parents who are usually not active in participating in joint activities with children within the school. Interesting activities aimed at involving parents could be:

- ***"Building a healthy nutrition living/meeting room in school"*** – the idea is all parents and students together with the teachers build a "healthy nutrition living room" in the school - a place where everybody would feel comfortable to be and talk. A room which is full of photos, recipes, ideas, herbs and seasonings that parents and teachers bring from home to share with others. This living room can be used for the meetings between teachers, parents and

students in order for them all to feel as if they are at home and to provide those who come with interesting ideas about various meals and healthy snacks. The building of the "living room" is a long-term process, which requires contribution from parents, students and teachers. Depending on the room, chosen to be "built" as a living room in the school the activity may require some construction works, painting or just refurnishing and redesigning.

- ***Exploring parents' different food cultures/Food tourists*** – this activity aims at bringing together people from different cultures and showing kids different nutrition traditions from around the world. This activity can be organized in the form of workshops with pictures parents bring from their childhood and share what foods were important; why; how these foods were usually prepared by their families and how they continued maintaining the traditions in nutrition. The activity shows different traditions in preparation of food in different cultures. The activity is helpful for children to explore various tastes (since we know kids usually focus on a limited number of foods they prefer and like in their young ages). With the involvement of parents in such activity, there could be sharing of values, believes and practices used in different cultures to keep children healthy.
- ***Experimental photography of food*** – this activity is meant to be carried out together with parents and kids. The idea is for kids to prepare certain kind of meal, or a dish, dessert (whatever they like) together with their parents; then to make pictures of it (from different angles, or also during the process of preparation). Pictures can be presented at a workshop or another type of event at which kids together with parents will have to guess the ingredients, to name their nutrition value and importance for health. The activity combines learning of new skills, new facts about food too, promotes collaborative work and parent involvement.
- ***Exploring the path of food (from growing, to consumption, to degrading and making compost)*** – the proposed activity can be organized in two ways: one is as a long-term activity during the whole term (or school year) or as a short-term (one-time event). If the activity is organized as a long-term event children can plant a garden with different vegetables (or fruits), grow them (caring, watering, etc.) then use the grown fruit/vegetables to prepare meals and eat them and then use the leftovers to prepare compost and feed the soil for new production. As a one-time event, the activity can be organized as a workshop with pictures of different kinds of food arranged as a wheel (the path of food). This is also suitable for food which is difficult to "grow" and produce at school as meat, milk, cheese, etc. Parents can be involved in the activity preparing the visual materials or helping the kids in the gardening process (parents can visit the garden once or twice a week for a short time to help kids).
- ***Creating a "food" mural*** – the idea of this activity is to create a large scale "painting" using different kinds of food. This activity requires parents and teachers to work together to help kids create the painting, since it is necessary before putting the food on the mural to have some sketches and drawings (planning of how the mural will look like). In the process of creating the mural, teachers, kids and parents can learn about the foods (for example why they are of different colours), improve their communication skills and skills to work in a team.
- ***Food domino*** – the activity aims to make kids and parents to get to know each other better and be freer to communicate between each other and respect each other's point of view and

food preferences. The activity requires the group of participants to form a circle at the end of it. The activity starts with one person who presents him/herself in the following way: "I am Peter and on the one hand (showing his right hand) I love carrots, and on the other (showing his left hand) I love chicken." The next person who will have to join the "food domino" will have to take one of Marco's hands (depending on his/her food preferences) and say for example: "I am Anne and on the one hand I like carrots (taking Peter's hand) and on the other I love apples (the hand showing the apples will then have to be taken by someone who on the one hand loves apples and on the other something else.) For a bit bigger children this activity can be organized in a way to form the food domino taking each other hands showing food which is good and possible to combine in a healthy way. For example: "I am Peter and on the one hand (showing his right hand) I love carrots, and on the other (showing his left hand) I love chicken." Then the next person to take one of Peter's hands will have to think of food that can be combined in a healthy way with carrots (for example potatoes). The person to take Peter's hand that "shows" the chicken can take it and say the he/she likes chicken with brown rice, for example, and so on.

3 CREATIVE AND ENTERTAINING WAYS TO ENCOURAGE CHILDREN TO EAT HEALTHILY

3.1 DESIGNING KID-FRIENDLY ACTIVITIES AT SCHOOL AND AT HOME

"EAT THE RAINBOW"

Why are there so many songs about the rainbow? Because it is incredibly beautiful not only in the sky, but also at the dining table. "Eat the rainbow" helps the human body to get a full set of nutrients.

What is under the rainbow? **RULES:**

1. Draw an arc on a piece of paper before dinner. Take the drawing, coloured pencils or crayons and place them on the dining table.
2. Look at the food on the table and find out if it matches any colour of the rainbow you drew, note which colours are missing on your table. Make a list of foods that would fill the missing colours. Then add them to your weekly shopping list.
3. Take your rainbow in your kindergarten or school and play it at lunch with three of your friends.[15]

15 https://www.wholekidsfoundation.org/downloads/better-bites/better-bites-eat-a-rainbow.pdf

As a supporting material use Annex...(Colours of foods)

RAINBOW OF FRUITS AND VEGETABLES!

Draw a large rainbow. Ask children "Can you imagine that the rainbow is made of fruits and vegetables?" Ask them to list all the red, orange, yellow and purple and green fruits and vegetables they can think of. While they are doing this, you can share interesting facts or personal stories about the fruits or vegetables.[16]

WHERE DO I COME FROM?

This is a game that will help children learn about the origins of different foods. When you eat together with your child and eat an apple, for example, you can ask "where do I come from" (pretending to be an apple and changing your voice). If the child does not immediately remember, you tell him/her until he/she gets the correct answer. Wonderful examples of this game are: potato - a plant whose tubers are buried underground, lemon - tree, milk - cow, bread - wheat, bee honey - bees. You can together visit a farm or a garden where the child can see where, how and under what conditions natural food products grow.

HANDS ON

Teach kids fun facts about different foods! You can look for interesting facts on the Internet, such as: Apples, onions and potatoes have the same taste ... if you try them with a stuffy nose. The Cherry belongs to the Rosaceae family. Strawberries are the only fruits whose seeds are located outside. Immersed in water, the apples do not sink, as 25% of their composition is air.[17]

FUN FRUIT AND VEGETABLE SNACKS

When it comes to healthy food for kids, art always does miracles. Unleash your imagination and build healthy eating habits for your children by creating together creative and fun snacks of fruits and vegetables. Make ladybugs of tomatoes and olives, fruit skewers, funny human faces, mice etc.

As a supporting material use Annex...(Lady bug tomatoes)

As a supporting material use Annex...(Funny faces)

As a supporting material use Annex...(Food skewers 1)

As a supporting material use Annex...(Food skewers 2)

As a supporting material use Annex...(Mice)

FUN HEALTHY CROSSWORD PUZZLE

16 http://ladyzone.bg/article/za-doma/semeistvo/hranitelni-igri-za-deca.html

17 http://www.kidspot.com.au/kitchen/articles/nutrition/5-fun-ways-to-teach-your-kids-about-healthy-food-choices

You can always make a crossword, including useful and healthy foods. You can record from example "This food is red, round and grows on a tree. What is it? "The answer is a healthy apple.

As a supporting material use Annex...(Fruit and vegetable ccrossword)

GUESS WHAT IS IN THE JAR

You need several large jars in which you can safely pour the corresponding fruit, vegetable, legume, and so on. Choose for kids what to guess. Jar 1 may include lentils, jar 2 beetroot, jar 3 dried peppers, jar 4 avocado, jar 5 raisins, jar 6 pear, and so on.

FOOD TRAFFIC LIGHT

Let the children draw the food and beverages they think of on the sheets of paper. Then paste the children's drawings to the large coloured circles of the traffic light! Forbidden foods and drinks must stand next to the red circle! Foods which should be consumed in small quantities should be placed by the yellow circle. Foods and liquids we can safely consume and which are useful to us stand by the green colour!

As a supporting material use Annex...(Traffic light)

HUNTING FOR FOOD

Cardboard, scissors, glue and old culinary magazines or promotional brochures are required for this game. The idea is for children to "catch" food for lunch or dinner. Prepare a menu such as a vegetable risotto, salad, fruits for dessert. Let children find appropriate food pictures needed to make lunch/ dinner, from magazines, cut them out, then stick them on the cardboard in the form of a collage that embody the family lunch/ dinner. Game conditions may change depending on the topic - picnic, birthday, breakfast, etc.[18]

THE ISLAND OF TREASURES

This is an interesting open-air game you can organize in the yard, in the park, and anywhere else where you can bury treasures at long distances from each other. In this way, the game becomes more challenging as children seek longer for the treasures and are physically active, running larger routes. It is necessary to prepare the terrain and choose several different types of fruits and vegetables. Some would be exotic or strange to children, such as mango or guava. Once you are ready with your choice of "food treasures," you should well hide each of them at the base of a bush or tree, under a bench or table, behind a pot or something similar. Give child/children a shopping bag or basket and let the treasure hunt start. When the children return to you with the "treasures" they have found, ask them what fruits and vegetables they have found. Tell them something important about them - how they taste, what they are useful for, how they are consumed, and so on. Let each one of the children choose his favourite "food treasure" to take for himself as a reward for his participation in the game.[19]

18 http://ladyzone.bg/article/za-doma/semeistvo/hranitelni-igri-za-deca.html
19 There again.

FOOD ART

Using some pictures or drawings, you can ask kids to recreate these objects with fruits, vegetables, seeds, etc. Using different colours of foods, kids can be encouraged to free their creativity and "paint" animals, natural objects, etc.

As a supporting material use Annex...(butterfly)

As a supporting material use Annex...(Ship_sun)

3.2 CELEBRATE IMPORTANT WORLD EVENTS RELATED TO FOOD, WATER AND HEALTHY NUTRITION

A good way to introduce healthy nutrition to kids is to use world days that promote awareness about specific topics like world food day, world health day, world water day. Teachers or parents can prepare a specific presentation or activity for kids to be involved into for each event. Here we have suggested some resources that have already been tested with kids and were met with enthusiasm and joy.

As a supporting material use Annex ... (presentation 1 for the world food day)

As a supporting material use Annex ...(presentation 2 for the world water day)

As a supporting material use Annex ...(use script for a role play activity_Henzel and Gretel fairytale)

3.2.1 Food and water experiments

PAINTED PLANTS

INGREDIENTS: n glasses with water (as much as there are different colours of paint you have), food paint (dye suitable to paint food as well), some plants (white flowers, cabbage or lettuce leaves, trees, grasses).

THE EXPERIMENT: put food paint in each different glass (different glass – different paint), then put (dap) one cabbage leaf or other plant into each glass. Leave your glasses during the night. In the morning (let's say after 6-8 hours), you will see what happened - leaves, flowers are discoloured. The most obvious change is observed if the primary colour of plants is bright or white. In addition, bright flower petals' edges/corners will turn into a lighter colour.

EXPLANATION: The plants take in the water inside them, therefore they also get the paint which is in the water. This phenomenon is known as the capillary effect: the water is transported even in the smallest leaf veins. This experiment can be carried out with flowers, grass and even trees. It is also nice if you can follow all process together with children and to see the difference from time to time (each hour)).

MIRROR REFLECTION

YOU WILL NEED: clean transparent glass (or jar, pitcher, vase, but it should be with even/steady glass), water, a drawing which can show two different pictures on the left and on the right side (for example: arrow, smile with winking eye) and so on.).

THE EXPERIMENT: Put the sketch behind the glass (paper and glass should be at about 15cm distance from each other), so that it is clearly visible through the empty glass. Slowly add water to cover the whole picture and see what happens.

EXPLANATION: Have you noticed that the objects, drawings look a little funny, different, when you see them through a glass of water? Illustrated drawing shows what happens when viewed through a glass of water.

As a supporting material you can use annex ...(water experiment_mirror reflection)

MAGIC WATER

INGREDIENTS: 440 grams of soda; 0.5 litter of vinegar; 1 litter of water.

INSTRUCTIONS: pour soda into the bowl and fill with vinegar, then pour the water, heat over a low heat (on the stove) until the mixture becomes transparent, pour into a transparent container, cool it.

EXPERIMENT: white powder appeared in the pot in which the liquid boiled after it was transfered another container . Get a cotton swab and swipe through the powder and insert it into the magic water you prepared, see what happens. Also you sprinkle the powder on the surface and pour on top of the magic water.

RAIN BAG

INGREDIENTS: Custom polyethylene bag; water-resistant markers; cup of water; blue food paint/dye.

INSTRUCTIONS: ask children to draw a sun and clouds, sea, waves (clamping at the top - the "cloud") on a polyethylene bag. Food dye makes water bottle in blue; pour blue water into the bags (water should cover depicted waves) and tightly secure. Hang the bag with a "sea" on a window in a sunny spot. Observe what is going on (an experiment lasts for a few days).

WHAT HAPPENS? When the sun heats the water bag, the water evaporates and forms little clouds. The spell of cold weather makes all the droplets again return to the “sea”. This creates a water cycle. Children learn water evaporation and water vapour turning into a mystery.

COLOUR SOAP BUBBLE

INGREDIENTS: glass; lukewarm water; Gouache; organic liquid soap.

INSTRUCTIONS: liquid soap mixed with lukewarm water 1 to 1. Stir in different colours Gouache (bubble colours will be brighter if more gouache is added). Mix everything well until the well starts foaming. Position different colour mixtures in a circle. Blow soap bubbles through a straw until bubbles will rise above the glass and use the table as a liaison for other coloured bubbles from other small glasses.

WHAT HAPPENS? Since a bubble is filled with heated air from our lungs, which is lighter than the ambient air in the room, the bubble will immediately rise. The mixture is formed of three layers - a liquid soap, gouache and water, making bubbles heavier and not allowing to explode when landing onto the surface. Moreover, liquid soap has a characteristic at the same time to expand in all directions. This does not burst the bubbles, and they "travel" on the glass. The merger of multi-coloured bubbles: they merge and form a different hue.

MAGIC BUBBLE

INGREDIENTS: glass container; water; food dye (may be and gouache); oil; crystalline salt.

INSTRUCTIONS: paint water, add oil. Oil stays above the water, because the water is heavier. Then pour salt. The glass vessel to the surface of the bubbles begin to emerge.

WHAT HAPPENS? Salt "transports" oil to the bottom while sinking into the water. The salt dissolves and releases the oil. Being lighter than water, the oil drops rise to the top to form coloured bubbles.

DRAWING WAX ON WATER

YOU WILL NEED: a candle; bowl with cold water; matches.

INSTRUCTIONS: Light a candle and trickle hot wax into cold water in an attempt to extract a variety of forms. Hot wax and cold water form a variety of shapes. Extracted unique shapes you can use to create images of the chosen topic.

WHAT'S HAPPENING? Explain to the children that each state of the body depends on the actual temperature. Wax at high temperature becomes liquid, when it falls in cold water, it hardens. This method is used in industry for the production of a variety of glass, plastic and metal products as well as confectionery – to manufacture of chocolates, ice cream.

DANCING RAISINS

INGREDIENTS: raisins; **carbonated mineral water or other beverage bottles (transparent).**

INSTRUCTIONS: unscrew the soda bottle stopper and pour the raisins. Screw the plug. Raisins go up and go down again - it seems like a "dancing".

WHAT'S HAPPENING? When raisins sink, carbonic acid in the water forms the bubbles which can get stuck to raisins and bring them to the surface. The surface of the bubbles burst, raisins again become heavier than the water and thus drown. While they are sinking, carbon dioxide bubbles "get stuck" again raise them up. It gives the impression as if raisins are dancing.

3.3 HEALTHY RECIPES TO COOK WITH KIDS

PEANUT BUTTER & GREEK YOGURT FRUIT DIP

Necessary products:

- 1 container (~200 ml) of Greek Yogurt (plain)
- 1-2 tablespoons of natural peanut butter, plain or crunchy
- If you want to add a little more flavor, add honey, vanilla drop, or cinnamon.

How to make it:

Mix together and you have a fabulous, high protein snack! Serve with apple slices or other cut up fruit or even crackers.

Enjoy!

RAW BIO BONBONS

Necessary products:

- 250 gr walnuts (other nuts can be used as well - almonds, cashews, sunflower seeds);
- 400 gr dates (raisins can be used if you do not prefer dates);
- 3 soup spoonful sesame tahini;
- Pistachios, cocoa, cinnamon, chocolate, cocoa grinds.

How to make it:

Soak the nuts in hot water for 30 minutes. During this time you can blend the dates with the sesame tahini. Grind the nuts in a blender – not too fine, so that they do not let out their oil. Mix the nuts with the blended dates. The mixture is thick and sticky. Make small balls and roll them in a mixture of Pistachios, cocoa, cinnamon, chocolate, cocoa grinds. You could exclude some of the last ingredients if you consider them too much.

Enjoy!

SUMMER FRUIT BRUSCHETTA

Necessary products:

- 1 loaf of French bread cut into thin slices
- 10 strawberries diced into small pieces
- peaches diced into small pieces
- tablespoons balsamic vinegar
- 1 cup fresh basil leaves cut into small pieces
- 1 log cranberry goat cheese or just plain goat cheese

How to make it:

Preheat oven to 180C. Place French bread on a baking sheet and bake for 8-10 minutes until fully toasted. In a medium sized bowl, combine strawberries, peaches, and balsamic. Spread goat cheese onto each slice of French bread. Place fruit mixture on each piece of French bread with a slotted spoon.

Enjoy!

HEALTHY APPLE WEDGES SNACK

Necessary products:

- Apples
- Ingredients for spreads
- Ingredients for topping

Suggestions for spreads:

- Peanut butter (100% natural, bio or organic): peanut butter is great because it balances this snack with some protein from the nuts.
- Almond butter: like peanut butter, almond butter also includes protein, and makes a great dip or spread for apples.
- Cream cheese
- Yogurt: plain or vanilla yogurt tastes great on apples + think about toppings you will use
- Chocolate (suggestion to use one which has >70% cacao)
- Sunflower butter (you can mix it with cinnamon)

How to make it:

Wash the apples, cut them in wedges and core them. Soak in a bowl for a few minutes with cold water and a few drops of lemon juice. Dry thoroughly before attempting to put on any spread. Spread either all natural peanut butter, or cream cheese on each apple wedge. Press into a bowl of toppings.

Enjoy!

Suggestions for topping:

- granola
- chocolate chips
- coconut
- dried cranberries
- raisins
- chopped peanuts nuts
- toasted wheat germ
- sunflower seeds
- cereal
- sliced almonds

HEALTHY CAKE

Necessary products:

- 2-3 ripe bananas;
- large eggs;
- cups ground oats;
- ½ cup whole-grain flour;
- ½ cup brown sugar (the recipe can go without sugar if you want it to be perfectly healthy);
- ½ cup oil;
- 2 soup spoonful cinnamon;
- 1 tea spoonful backing powder;
- 1 cup orange juice;
- ½ cup ground walnuts;
- ½ cup cut apricots;
- ½ cup raisins.

How to make it:

Mix together the bananas, oil, oats, orange juice, eggs and sugar (if you decided to add it). Then add flour, backing powder and cinnamon to the mixture. Grind everything in a blender and then with a mixer. You could add some cocoa milk to make the cake even fancier. At the end, add nuts, walnuts, raisins and apricots. Warm up the oven at medium temperature. Bake the cake for 50 minutes in the oven (180C), before you pour everything into a bowl or pan, you have to oil and then flour the pan/bowl a bit. Do the check with the tooth-pick in order to test whether the cake is ready.

Enjoy!

SPINACH ROLL

Necessary products:

- eggs;
- 300 gr. spinach;
- salt, black pepper, seasonings;
- soup spoonful flour;
- crème cheese;
- 3-4 roasted red peppers or salmon or roasted carrots;
- oil.

How to make it:

Stew the spinach and drain the excess liquid. Beat the eggs into a fine mix and add the spinach and seasonings. Gradually add the flour while mixing with a wooden spoon. Pour the ready mixture on a pan covered with baking paper and bake at 180C for 10-15 minutes. After it cools off, peel it from the baking paper and place it on a towel. Cover it richly with crème cheese and put the roasted peppers or salmon or roasted carrots on top. Roll it, cover it with a folio and put it in the fridge for a few hours.

Enjoy!

WHOLE-GRAIN BANANA BREAD

Necessary products:

- 80 ml extra-virgin olive oil;
- 100 ml bee honey;
- 2 eggs;
- 2 big bananas (really ripe);
- 60 ml milk (according to your preferences – cow-milk, soy milk, nut milk);
- 1½ tea spoonful baking powder;
- 1 tea spoonful vanilla extract;
- ½ tea spoonful salt;
- 1 tea spoonful cinnamon;
- 1 tea spoonful ground ginger (not compulsory if you do not like it);
- 180 gr whole-grain flour;
- 30 gr black chocolate chips (not compulsory).

How to make it:

Heat the oven to 170 degrees and brush the form of bread with a thin layer of oil. Beat the honey and the olive oil in a bowl until the mixture becomes even. Add the eggs and beat well again. Grind the bananas in a separate bowl and add them to the mixture together with the milk. Add the baking powder, salt, vanilla, ginger and cinnamon and mix well. Sieve the flour above the bowl if that is possible and mix carefully with a big spoon until the mixture takes all the flour. The mixture will not be perfectly even because of the bananas, but that is fine. Add chocolate chips to the mixture, if you decided to use it. Put the mixture into the baking pan and sprinkle with some cinnamon if you like that. Bake for around 60 minutes or as long as ready. After the bread is ready, take it out of the oven and let it cool in the baking pan. If you try to take it out while it is still hot, it may break. After it cools off, take it out, cut it into slices and preserve it in a firmly covered box in the fridge.

Enjoy!

OATS AND BANANA COOKIES

Necessary products:

- 2 ripe bananas
- 1 cup whole grain oats
- 2 tablespoons of peanut butter
- You can add: dark chocolate chips (>70% cocoa is the very best for your health), dried cranberries, shredded coconut, walnuts or even a little bit of cinnamon and raisins.

How to make it:

Grease a cookie sheet and preheat oven to 180C. Peel and mash bananas using the fork. Mix together the bananas, oats, and other selected ingredients (note: whatever you decide to add, stick to ¼ cup or less, or the dough will not stick together). The texture should be like a wet cookie dough. Scoop dough onto the greased cookie sheet. Bake for 15 minutes in the oven. Take it out and serve.

Enjoy!

PUMPKIN CAKE COOKIES

Necessary products:

- ¾ cup pumpkin puree
- ½ cup unrefined coconut oil, melted
- 6 eggs
- 2 teaspons vanilla extract
- ¼ cup pure maple syrup (or honey)
- 1 cup whole wheat flour
- 2-3 teaspoons Pumpkin Pie Spice (cinnamon, ground ginger, ground cloves, ground nutmeg)
- ½ teaspoon baking powder
- 1 cup >70% dark chocolate chips

How to make it:

Preheat the oven to 180C. Combine pumpkin puree, coconut oil, eggs, vanilla and maple syrup or honey in a stand mixer or large mixing bowl and mix well. Stir together flour, pumpkin pie spice and baking powder. Add flour mixture to the wet ingredients and mix well, until all the clumps are gone. Fold in chocolate chips and mix to ensure all ingredients are evenly distributed. Scoop dough in a large tablespoon onto a parchment lined baking sheet. Bake for 12-15 minutes, or until bottoms are slightly brown. These cookies are supposed to be cake-like, so they will not look like normal cookies.

Serve and enjoy!

3.4 LINKS TO ADDITIONAL EDUCATIONAL MATERIAL FOR KIDS

1. Resource for colouring pages for kids with interesting scenarios where fruit and vegetables are the main characters: http://www.montefiore.org/coloring-pages

2. How root vegetables are grown: https://www.youtube.com/watch?v=VJ7KwES45GY

3. About the importance of the fruits and vegetables. Movie for kids Captain Kuk, episode "The Treasure of the Pyramid": http://www.salute.gov.it/portale/news/p3_2_7_0_1.jsp?lingua=italiano&menu=multimedia&p=video&id=1495

4. Action for healthy kids: http://www.actionforhealthykids.org/tools-for-schools/find-challenges/class-room-challenges/1212-nutrition-education

5. Promoting and influencing healthy food choises for children: https://healthy-kids.com.au/teachers/teaching-resources/

6. From the beginning to the end of the harvest of the onion: https://www.youtube.com/watch?v=GUHaXWZg7fQ

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WHAT IS GOING ON IN THE KITCHEN?

IV PART

1 WHAT IS GOING ON IN THE KITCHEN?

Schools' canteens and other school food services can be considered as important educational resources as, in addition to providing food to the students, they represent an integral part of the school environment. For this reason, **school canteen should reflect the educational goals of the school and support and complement students' learning.** When consumed daily, the food provided in the school canteen may comprise a third of a student's total daily intake and have a significant influence on their health and nutrition. It is important that parents, teachers and students work together to support a whole-school approach to build a consistent culture in which students actively choose nutritious foods and a healthy lifestyle.

1.1 THE IMPORTANCE TO ENGAGE KITCHEN STAFF IN SCHOOL MEETINGS ON ISSUES RELATED TO HEALTH EDUCATION

The disciplinary code of the scholastic services includes the institution of the "Canteen Commission" for the schools that benefit from canteen services. The canteen commission is an organ of connection between providers and consumers and performs a control role supporting the improve-

ment of the quality of both foods and services.

As representative body, the canteen' commissions can perform:

- a connection role, taking charge of consumers' suggestions and complaints;
- a collaboration role monitoring the dishes' acceptability and the services 'provision thanks to the evaluations conveniently prepared.

It would be advisable to support the evolution of the canteen commission' role as interlocutor/partner in the projects of nutritional education, in order to make its members more responsible as well as to promote healthy nutritional choices by parents. The municipality should draw up a local code in order to determine the operability and the functionality of canteen commissions and to define the relationship between commissions and institutional bodies.

Further it is provided one of the example of Italian Canteen Commission (in Florence) (please, take in mind that each country, and its each Municipality has its own guidelines)

Director of the Education and Culture Service

- Office worker of the Education and Culture Service
- Dietician of the Education and Culture Service
- Cooking center manager of the contractor scholastic food service (or a delegate)
- Delegates of the cooking center
- Dietician of the cooking center
- 1 parents' representative for each pre-primary and primary school
- 1 teachers' representative for each pre-primary and primary school

The Canteen' Commission performs an advisory role and takes information in the school about every single aspect related to school catering.

The delegates of the Canteen Commission have the following tasks:

- To provide efficient services to the nutritional needs of the children by controlling the distribution terminals;
- To collaborate with the Administration by promoting programs, activities, and workshops in order to develop nutritional education in parents, children and school staff;
- To visit school canteens in order to taste food;
- To monitor food satisfaction by using evaluation reports provided by the Administration and reporting problems from the processing to the food administration;
- To visit the cooking centre.

1.2 THE IMPORTANCE OF TRAINING COURSES ADDRESSED TO KITCHEN STAFF

In order to educate children to healthy food, it is necessary to start multi sectoral activities that include several actors and a series of coordinated and continuous actions which should be consistent in terms of messages and behaviours. In school canteens it's essential to increase the nutritional and sensorial quality of food, keeping the nutrition security principles.

Therefore we underline the importance to organize training courses addressed to kitchen staff on topics like educational aspect of food, educational power of food, food as educational tool at lunch/breakfast/dinner, food presentation, and others.

The right management of food services can favour correct food choices by evaluating the menu adequacy and promoting different dishes and recipes. In addition to producing and distributing dishes, a **right management of food services can perform a main role in nutritional education involving children, families and teachers.**

Service Manager' tasks:

- To provide service by respecting the current legislation and the contractual obligations;
- To offer food products in a system of quality
- Suggesting and updating information about training courses for the catering staff

It is important to provide the catering staff with training and updating activities in order to convey the knowledge of the basic principles of proper nutrition and the general concepts regarding the different aspects of catering in relation to the organizational situation and the type of users (i.e. special diets). Training and its effectiveness must be documented with appropriate tools and methods. Lunch is an important socialization moment: children eating together can continue the aggregation process that begins during school hours. Sometimes, lunchtime fosters the classroom integration. Collective meal can also be an important occasion for food education, as kids learn to properly behave and to eat when they are at the table.

Of course, it is important that children would be followed by teachers during meals. Sometimes, when they are at the canteens, children simply eat foods that they usually do not like, because they are encouraged by the group and by the teacher. **In healthy food education, the attention to the portions is gaining an increasing importance for the possible correlation between the body weight, the average size of the portions and the qualitative choices of the kids.** Therefore, it is important that providers are adequately trained on portioning and that they distribute dishes by appropriate tools (ladle and skimmers that have the proper capacity to secure the proper portion with one grip) or in a predetermined number of already-parted pieces. If, at the same place, there are children of different ages or schools (pre-primary and primary) it is necessary to have different capacity measures for the same tool in order to provide the appropriate portion. Each tool must be marked with a dis-

tinctive sign, so that the distribution can proceed with separate tool sets based on the user target. Moreover, the characteristics of the space are very important to create enjoyable and educational moments during the canteen: it should be pleasantly painted and furnished; in addition, it should have adequate dimensions, proper soundproofing and aeration.

But, despite all the efforts, sometimes children refuse canteen food. Why? The reasons are many. Of course a decisive factor is represented by the organoleptic quality of meals that should be cooked simply with high quality raw materials, distributed at the right temperature and in a captivating way. Alongside these aspects, also children' eating habits throughout the day play an important role, starting with breakfast. Many children consume a poor breakfast or they have it occasionally. Consequently, in the mid-morning they are hungry and they tend to eat too much at the recreation time, consuming big portions of high energetic foods like sandwiches, pizza and snacks. Inevitably, they have no appetite at lunch and they are badly disposed towards food. This common error can be repeated in the mid-afternoon: high calorie snacks predispose to a nutritionally unbalanced dinner. Parents' attitude is also extremely important: when parents look at the canteen with distrust, children perceive this feeling and they feel justified in not eating at school.

It is not sufficient to use compensatory measures like special diets. **"Cooking" in an intercultural way means assuming variety as a paradigm of openness to diversity.**

Healthy catering proposal at school can correct wrong eating habits of both kids and their families. It is necessary to organize a strategy for a real growth in quality based on health and prevention criteria by adopting an intercultural perspective and by promoting a constructive dialogue and a cultural debate.

1.3 FOOD COMBINATION, NUTRITION BALANCE BETWEEN PROTEINS AND CARBOHYDRATES

A balanced diet must have proteins, carbohydrates, fats, vitamins, minerals and water, which are all broken down by the body and then absorbed into the bloodstream. Therefore, it is important for canteens' staff (and for all actors involved in children' nutrition) to have a specific knowledge about food combination and nutrition balance as consuming food the right way and making smarter choices can increase the nutrient absorption, which is necessary for children' overall development.

1.3.1 Nutritional aspects

A balanced and correct nutrition is a prerequisite to maintain good health and optimal growth. At school, correct nutrition has the task of educating children in learning healthy eating habits and behaviours.

The school catering menu should be processed according to scientifically validated nutrition principles in order to result tasty and varied. It is also important to have typical dishes in order to promote the knowledge and the maintenance of local food traditions. The dietary table should ensure proper nutrition intakes both quantitatively and qualitatively in order to comply with the needs for health and growth support and to avoid the recourse to adaptation mechanisms in case of poor or excessive intakes.

For this reason, it is necessary to adopt the National Guidelines that guarantee proper nutritional and energetic requirements for each age. The editing of the nutritional plan must necessarily be entrusted to competent professional figures (physicians, dietitians or other nutrition experts). A proper diary energetic intake is a prerequisite to a balanced diet. The energetic requirement (kcal) is the energy amount necessary to compensate the energy waste for people who have regular physical activities, who actively participate in the social life and who have a body composition compatible with a long term good health status.

The calories' percentage for lunch is higher than the one for dinner because the residual activity of the day and the energetic demand is lower in the evening. It is not appropriate to attribute more than 40% of the energetic requirement at lunch in order not to negatively affect the afternoon activity with a heavy digestion.

1.3.2 Protein requirements

The values of the energetic requirements have been obtained by the evaluation of the protein quantity necessary to the body growth and to the maintenance of the nitrogen balance in presence of a proper energetic intake. These values have been conveniently augmented by 50% to guarantee a margin of safety and they have been corrected considering an effectiveness of utility of 70%. Proteins should guarantee about 10-15% of the total energy. As for others nutrients, high protein intakes could be harmful in the long term. It is advisable to respect the indications and not to exceed the double of recommended levels. Vegetal and animal proteins should be in a ratio of 1 to 1 according to the paediatric nutrition guidelines.

1.3.3 Lipid requirements

The recommended diary amount of lipids is 35-40% of the total calories until the second year of

life and 30% until adolescence. Fatty acids must not exceed 10%, polyunsatured fats 2-6% and monounsatured fats about 14-15% of the total energy. Omega 3 and omega 6 play important structural and metabolic roles among polyunsatured fats. 2-3% of omega 6 and 0, 5% of omega 3 are the recommended requirements for kids. Cholesterol is another matter, WHO recommends to not exceeding 100 mg/1000 kcal (World Health Organisation, 2000).

1.3.4 Carbohydrate requirements

Carbohydrates are the main energetic source to our body as they are essential to organs and tissues like the nervous system. A diet low in carbohydrates provokes the accumulations of ketones, an excessive catabolism of tissue proteins and the loss of cations like sodium. A percentage about 55%-65% of the total energy should be represented by foods which are rich in fiber like pasta and bread, whereas the amount of simple sugars should not exceed 10%. Simple sugars are also present in many primary foods like milk, fruits and some vegetables which are usually present in kids' daily nutrition; therefore, an intake up to 15-16% is admissible for them, provided that the intake of saccharide, which is present in sweets and sugary drinks, is limited.

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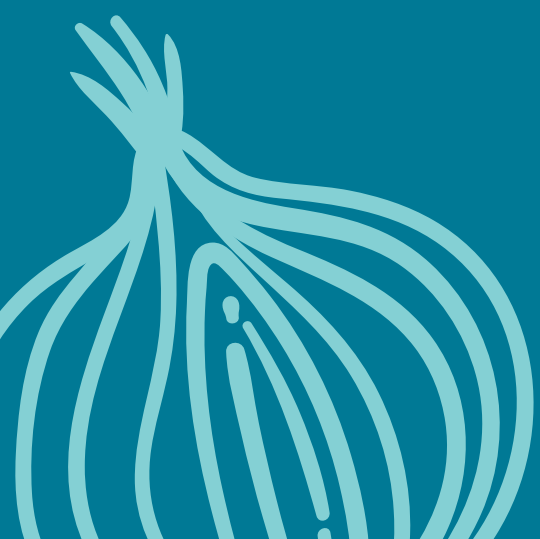
GOOD EUROPEAN PRACTICES IN THE FIELD OF HEALTHY NUTRITION EDUCATION

V PART



1 LOCAL PRACTICES

A number of interesting and inspiring local practices have been shared by the partners from 6 European countries (you can find the National analysis reports and International analysis report at: http://healthedu.emundus.eu/analysis), however, the one that made the strongest impression is a Greek practice called "An Alternative School Canteen" implemented in a primary school in the Greek town of Oropos, where students, parents and teachers together created a cafeteria where students buy only handmade snacks. Every week, a different group of children takes responsibility for the running of the canteen and together with their parents, prepares all the food and food products to be sold in the canteen that particular week. This is an excellent approach for bringing the students, who normally learn about the benefits of good nutrition from books, to learn through the canteen how even the most simple changes in their daily lives, can improve their physical condition, health and energy level. For more details, visit the Greek national report. Health friendly nutrition has been promoted locally also in Italy, through "A scuola con la zucca!" project of IC Montelupo Fiorentino (Florence), which included experimentation with pumpkins at the school canteen together with educational and training activities with families and initiatives in the classrooms with pupils to encourage healthy nutrition. The Lithuanian national report was particularly abundant in local practices, which is a clear proof of the importance, which Lithuanians put on healthy nutrition of the society in general and children in particular. The educational institutions involved in the project from Lithuania have shared a great number of good practices for forming and improving healthy lifestyle attitude and skills, implemented by Smilgių gymnasium in Panevežys (project "Move strenuously - be healthy"), Old Trakai kindergarten, Trakai district (programme "Discovering the World", according to which the last week of every month is assigned for education on healthy lifestyle, introduc-

ing lessons regarding healthy lifestyle, benefits of consuming fruits and vegetables, etc.), Kaunas Waldorf kindergarten „Šaltinėlis" with their project "I will grow healthy and strong", "1 m2 garden" Kaunas Environmental Center with their annual initiative for a healthy lifestyle and nutrition, called "Eating apples makes me stronger" with the participation of Kaunas kindergarten-school "Šviesa", Kaunas kindergarten "Aušrinė" and their participation in the social project "Health friendly". To continue with the good examples, the "European day of healthy food" is celebrated widely in Lithuania, including in Vilnius kindergarten "Linelis" and Piliuonos gymnasium. The social responsibility project „Sveikatai palankūs" ("Health Friendly"). Schools and kindergartens which were involved into HealthEDU project from the beginning, mentioned this practise as good practice where educational establishments strive to create between children, nature and all things natural is visible in the practice – this impression was shared by Private kindergarten "Vaikystės lobiai", located in Kaunas district, which also organizes projects "Ecologic flowerbed", "Green windowsill", "In grandpa's garden" and "In grandma's kitchen". A valuable experience shared, which demonstrates the presence of a long term vision and sustainable intentions for regular health friendly nutrition focused actions is the Association „Sveikatos želmenėliai" established by seven kindergartens in the Trakai district. This association propagates the principles of healthy lifestyle among teachers, parents and society in general, improving teachers' qualifications and sharing work experiences in the area of healthy lifestyle education at kindergartens. Teachers prepare themes related to the topic of healthy nutrition, healthy lifestyle and teach children to take good care of their own health. The institution hosts a flowerbed inside its territory, where various herbs are grown: lemon balm, sage, tarragon, lavender.

2 REGIONAL PRACTICES

The first example for a good practice with a regional scope comes from Bulgaria - „Let us be healthy". This Bulgarian campaign is implemented by Image Consult Ltd. in partnership with the Municipality of Plovdiv has been running in all kindergartens on the territory of the municipality over a period of 6 years now. The campaign is particularly efficient and sustainable in its attempts at improving the contemporary training programmes, elaborated for the youngest children, among which - the programme for healthy eating. With the help of animators, the children get to know the main food groups and the necessity to eat nutritiously and to consume various foods. During the last 5 years, within the framework of the "Let us be healthy" campaign, have been carried out more than 850 performances before 76 000 children on the need for varied nutrition, consumption of fruits and vegetables and doing regular sports.[3] In Italy a practice worth mentioning is the "A scuola con Gusto" project for the territory of Tuscany, which aims to educate children at balanced and healthy habits through the use various training activities relying on the different senses (sight, smell, touch, taste). The project started in school year 2007/2008 by the good will of the Commission and the Mensa AUSL12 of Versilia and under the patronage of the Italian Ministry of Education, University and Research. We need also to take into consideration a Greek "School Meal" programme of the Ministry of Education and the Agricultural University of Athens, which was initiated due to other reasons (provision of lunches for school students as social support to families with low socioeconomic status in the region of Attica) but which is quite to the point considering that the food provided in the "School meals" is nutrition and following the rules for preparation and provision of a healthy Mediterranean diet. A substantial practice, which is also important to share here, is the examination of the quality of menus in schools and canteens initiated by the Spanish

Conselleria of Health, aiming at ensuring the nutritional quality of the food served to children in schools in the Region of Valencia. This program will involve professionals with training in nutrition and diets, inspectors on the official control of school canteens, as well as trained personnel to handle information related to the supply of food and beverages. In addition, it will designate central service personnel such as Public Health Centers (CSP), for the evaluation of the food supply of the menus of a school month.

3 NATIONAL PRACTICES

Among the most far reaching national practices, which are worth mentioning are the Italian "Saltainbocca" and the Greek "DIATROFI Nutrition Initiative". SALTAinBOCCA is an initiative addressed to Italian kindergartens and primary schools, born in collaboration with the Italian Federation of Paediatricians (FIMP). The project aims to provide children and parents the information they need for a healthy diet and proper physical activity thus trying to reverse the trend of overweight and obesity in childhood constantly increasing in Italy. SALTAinBOCCA has been presented the 11 October 2016 at the Press Room of the Chamber of Deputies obtaining the patronage of the latter and the Senate. So far the initiative has been joined by 213 schools each of them receiving the SALTAinBOCCA TOOLKIT, containing: 1 book with information and tips to promote a health friendly life style, 1 board game with dice and pieces, which allows children to learn rules of a balanced and healthy life style, 1 poster in each class, canteen and conference room, 25 postcards for parents of children with invitation to know the project in the classroom and to participate to a contest them dedicated. The Greek DIATROFI Nutrition Initiative[4] is run by the Institute PROLEPSIS since 2010 and has been providing free meals to students of low socio-economic background. In the 2015-2016 school year 247 Greek schools participated in the program, with 20 528 children across the country benefiting. Without exception, the school children participating in the program receive a daily free healthy meal, especially developed for their dietary needs. Furthermore, through specially designed training material, which includes short messages and tips on healthy eating, and the organization of information events and activities for parents and children, the Nutrition Program promotes healthy eating by encouraging students and their families to adopt healthy eating habits that they will follow throughout life.

Lithuania also boasts a Kaunas institution, dedicated on consulting educational institutions throughout the country on healthy nutrition and forming children's menus – VšĮ „Sveikatai palankus". In 2016 VšĮ "Sveikatai palankus" initiated the national social initiative project "Health friendly education institution", which aims to present the peculiarities of children nutrition to the community and the responsible institutions and to initiate necessary changes. Interesting to mention are also: - the Bulgarian project "Culinary recess – Manjitsu" initiated by Lidl Bulgaria, which aims to introduce to children from 1st to 4th grade in a fun and interesting way with major topics on what a healthy and balanced diet is as well as to motivate them to share what they learn at home and to join more actively the process of food preparation together with their parents. - the Greek "Healthy Children, Healthy Planet" initiative, which commenced in 2016, organized by the WWF Hellas in collaboration with the Harokopeio University of Athens and educating children in making healthy and 'green' food choices.

4 INTERNATIONAL PRACTICES

Usually every country has some initiatives to impact and promote healthy nutrition in schools and in general for kids and adults. There are number of initiatives of the World Health Organization and UNICEF to promote the awareness and put in practice methodologies for fostering healthier wellbeing of young people and adapt the educational process in such a way as to kids to be able to form healthier habits and better informed choices about their food and state of body and mind. It would be very helpful for the reader to get acquainted with the recent report "From promise to impact: ending malnutrition by 2030" – this report shows not only data and provisional measures, but also country profiles around the world and how each address the problems with unhealthy eating.

Helpful tools in the process of building healthy eating habits can also be these two guides:

- "Best Practices for Child Care Nutrition and Physical Activity Environments A Guide for Self-Assessment and Policy Development" – one of the best features of this guide is that it offers instruments for self-assessment for the food serving practices, about physical activity, parents and teachers trainings in the field, etc. It can be very useful for schools who would like to evaluate their policy and curriculum in the field of healthy nutrition, also receiving some tips about what would be the best for each age stage of the children in the field of healthy nutrition.
- and "Best Practices for Healthy Eating: A Guide To Help Children Grow Up Healthy" – this guide introduces the process of building healthy habits as early as at four to six months of age of 6 and older. It also offer nutrition facts and tips how to smartly build healthy portions.

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NUTRITION IN EVERYDAY LIFE

VI PART

1 THE IMPORTANCE OF RHYTHM IN NUTRITION

Rhythm is important everywhere. Rhythmical processes take place in nature: the day changes the morning, the evening changes the day, the evening is followed by the night. The seasons of the year interchange rhythmically, birds, animals and other organisms adjust to the rhythm of the nature. Human body also involves rhythmical processes: beating of the heart, breathing through the lungs, whereas all cells of our body have a day-cycle rhythm, those of the heart, liver, intestine appear to be especially sensitive. Thus, interrupted internal rhythm has an impact on the whole organism. Therefore, it is of crucial importance to have one's own balanced rhythm and keep to it.

We, humans, make a part of the organism of the Earth, therefore the same laws are applicable to us as to any living beings. Rhythms, cycles and phases rule the nature and we, as part of it, are subject to them and must keep ourselves in harmony with them if we want to achieve internal harmony.

Our organism obeys a particular rhythm determined by nature: everything happens as if according

to a clock. The rhythm of eating is not an exception in our daily agenda. If the operation of a small screw of a whole mechanism is interrupted, the whole system may incidentally break down. What happens then? Well, naturally, ailments, aches, sensitivity, nervousness begin torment us. Thus, eating every day at the same time is of special importance to our health.

Eating rhythm of every person might be individual, yet there are several pieces of advice suggested by doctors, nutrition specialists and even specialists of health education and psychologists that concern organism and rhythm. First of all, the attention is paid to the fact that all cells of our organism have a day-cycle rhythm, internal organs work according to a particular rhythm all day long, therefore, if our eating rhythm is interrupted, i.e. does not coincide with the rhythm of the day-cycle, we suffer from bad sleep, we feel bad and become subject to consequential series of failures.

Furthermore, the focus is brought on the relation between nutrition and the processes in a child's, as well as adult's, body which take place at a particular time of the day-cycle. Most probably, everyone knows that heart beating at night slows down, while the temperature of the body is lowest towards the morning and the highest towards the evening, around 5-6 p.m. Many parents must have paid attention to this when, for instance, the little ones fall ill. The rhythm of organs and eating during the day will be discussed in greater detail further.

1.1 WHAT TIME IS CONSIDERED TO BE SUITABLE FOR MEAL AND WHAT TO CHOOSE FOR IT?

Parents should collaborate to satisfy the caloric needs of kids: they have to correctly complete the daily nutrition of their children considering the canteen menu.

In this purpose it is suggested:

- The diary diet should be organized in 5 meals: breakfast, lunch, dinner and 2 light meals. The division of the energetic requirement in 3 main meals and 2 light meals helps in controlling hunger, avoiding the risk of binge and maintaining glycaemia steady by avoiding peak of insulin after meals.

- A copy of the canteen menu should be given to parents because the meal consumed at

home must complete the lunch consumed at school. If it is not possible to send the menu to each family, it should be always available at school, in the Municipality and online in order to be displayed at any time. It is necessary to vary as much as possible the type of foods, paying attention to its consumption rate in order to avoid loss or excess of nutrients and to guarantee a less monotonous diet to children.

All the requirements described above contribute to define health nutrition. To combine the requirements in a varied offer is one of the responsibilities of all the actors to be involved in children' nutrition. The following step is making health nutrition a friendly one. And this is the objective of the following chapter.

1.1.1 Breakfast

The peak of stomach activity is around 7–9 a.m., so there is a general recommendation to have a glass of water and then after some time breakfast at this time, however, one should not rush to have breakfast right after tumbling out of bed. One should choose light, easily digestible food that gives energy and does not burden the organism. In other words, it is suggested to have the food containing carbohydrates. According to Australian's well known nutritionist and dietician Rosemary Stanton (Stanton R., 2012), carbohydrates (especially their combinations) which are plenty in cereals (especially in un-broken cereal grains), fruit, vegetables as well as in pasta, potatoes make the basis of healthy nutrition. The first choices mentioned above would be perfect for early breakfast. Nutritious fibre (in healthy carbohydrates), especially those in cereal porridges, is important and related to lower risks of many diseases. Scientific research supports evidence that vitamins, minerals, antioxidants and other vegetable chemical combinations found in carbohydrates feature characteristics beneficial to health. Thus, you will not be mistaken to choose porridge for your breakfast (different cereals every day). For instance, in Waldorf kindergartens following Rudolf Steiner, founder of Waldorf education and first biodynamic farm, every day of the week is related to a different planet, which, in its turn, is responsible for a particular cereal grains. That is why every day of the week has its own cereals:

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
						
rice	*barley*	*millet*	*rye*	*oat*	*maize*	*wheat*

Why not to bring this proved experience home?

A small child has an inborn inclination to healthy eating – correct composition of food – thus it is namely mother who offers various compositions that seem attractive to her own taste even though

they do not fit together and so may interrupt healthy eating of her own child and form not so good eating habits. Maybe you have paid your attention that children quite willingly eat porridge that is not too sweet, separate meat from potatoes or fish from rice or leave some part of the dish untouched quite often. Avoid adding sugar, salt into dishes dedicated to small children – vegetables, fruit, berries and other products contain enough of these ingredients. Use only natural products to add salty, sour, sweet or bitter flavour to your meals.

1.1.2 Double breakfast. Fictitious or beneficial?

Maybe you allow yourself both early and late breakfast? Do you know how their impact on our organism differs? Early breakfast (7–9 a.m.) that contains porridges, flakes, crusts, grain or bread crisps, fruit, yogurt, juice, tea, milk (milk is best digested in the morning, until 10 a.m.) should not be too rich as the organism is not awaken yet. On the contrary, on the time of the late breakfast, also known as royal breakfast (9–10 a.m.), all functions of digestive organs are fully awaken and ready to operate, so one can choose richer food that contains fat and proteins, for instance, green vegetables, boiled eggs or omelette (baked in oven), semi-hard cheese, brown bread with butter and so on. Food may be more abundant to secure child's activity before lunch, lower irritation, higher productivity, smaller demand for sweets.

So if you have your breakfast just after waking up when your organism is still snoozing, choose early breakfast to avoid hindering your digestive system which is not yet ready to deal with the food. If you wake up very early, breakfast of both types is a good option. The most important thing is not to forget to have breakfast in the morning and obtain necessary energy for the rest of the day by eating wholesome breakfast. It is also recommended to train children to start their day with a glass of water no matter if they wake up early or late.

1.1.3 Morning snack (elevenses)

Allow your organism to rest for an hour or so from about 10 to 11 a.m. Spleen and pancreas work at full capacity during this period, therefore if you eat then you only burden these organs. Around 11 a.m., approaching the mid-day if you feel anxious waiting for lunch do not let hunger tease your stomach – have a light snack of low calories, such as fruit or vegetables.

1.1.4 When and what to eat for lunch: the composition of 4 flavours is the most ideal?

If you had your breakfast at 8 a.m., elevenses at 11 a.m., then around 1 p.m. your organism sends a signal that it is high time to have lunch and thus gather new strength for creative work. Lunch, just as breakfast, is an important part of eating rhythm, so one cannot miss it. 11 a.m. – 1 p.m., which is the time of the heart, is followed by 1 – 3 p.m. – the time of the small intestines. Small intestines is an important part of the digestive system – the majority of nutrients that get into the body is absorbed in there.

The richest meal of the day should contain a composition of all 4 flavours. As Michael Kassner writes (Compani & Lang, 2013), **4 flavours are necessary for the following reasons: sourness** gives joyfulness to a child, bitterness divides viable powers, **and saltiness** strengthens the perception of the body, whereas sweetness helps to feel oneself. **Bitterness** is the least used flavour of all, yet you can easily obtain it by adding a leaf of laurel, some sage or tarragon to your meals. Beside other good qualities, bitterness also encourages the feeling of satiety. While talking about **sweetness** we do not have in mind sweets; sweetness is obtained in the form of carbohydrates, it can be potatoes, pasta, cereals, by all means, vegetables. Even though it does not seem to be sweet when you chew it, our organism turns all carbohydrates into glucose, in other words, blood sugar. Saltiness comes with vegetable soup or some salt added to the prepared meals; many ingredients contain salt naturally. Children should get sour flavour from natural sauces (with lemon, orange), yogurt, juice, naturally fermented vegetables.

After the lunch, a period of calmness for senses should follow. This might me afternoon nap (it is especially important for pre-school age children), calm lay-down or calm games, walk, sitting or day-dreaming.

1.1.5 Afternoon snack

Afternoon snack is necessary not only for children and it is not a meaningless snack. Just around 3–4 p.m. organism as if wakens up after substantial lunch and a wish for a snack arises. Offer something to activate digestive system and prevent hunger until dinner, for instance, skimmed yogurt, a glass of berries, an apple or fruit salad. From 3 p.m. to 5 p.m. urinary bladder works most intensely so it is recommended to drink a lot and thus get rid of more toxic materials.

Another curious thing observed by medical doctors, dietitians is that even after perfectly balanced lunch and its appropriate amount, the need for sweets is noticeable around 2-3 p.m. At this time, the level of sugar in blood decreases thus resulting in light fatigue and need for sweets. The founder of Waldorf education, Rudolf Steiner underlines that physiologically, sugar in blood is the foundation

of our wakened sub-consciousness; it supports our 'innocent ego (Steiner, 1996).

Thus a small portion of natural dessert prepared with love would be the most suitable to satisfy inner relish for sweets, something small yet attractive, with pleasant smell (e.g. cinnamon or vanilla) that might "brighten the soul". For children it might be, for instance, 1-2 oat cookies (Recipe: oat flakes, honey, butter, raisins or sunflower seeds; baked in oven), baked apple with curd and dates, a piece of homemade apple-pie, cacao, tea, a cocktail of sour milk with berries, etc.

There is a high probability that the need for sugar will not develop for children if they sleep a daytime sleep at this time, yet the need for sweets (easily digestible carbohydrates) may occur at some other period of the day, for instance, when thinking, intellectual activities are encouraged.

1.1.6 Dinner

What is the most suitable time for dinner? If you keep to the described rhythm during the breakfast, elevenses, lunch and afternoon snack, 18:30-19:30 would be suitable for dinner. But it is also very cultural think, as the people from Mediterranean countries usually have dinner at around 19:30-20:30, but in that case they also go to sleep later. According to nutrition specialists, one should stop eating at least 3.5 hours before going to sleep. One should not overeat during dinner as well, while proper composition of food must be always kept in mind. It is recommended to drink a glass of water an hour before sleep.

What is following after the dinner? 5-7 p.m. is the time of the kidneys. Tea especially that of cranberries or cowberries, could be suitable. A family tea drinking ceremony around 7 p.m. might become a nice tradition, cosy sitting up together, time for communication, discussion of the events of the day. Avoid drinking, while around 9-11 p.m. energy is accumulated, therefore it is recommended to go sleep at this time. The most suitable time for children to go sleep is around 9-10 p.m. 11 p.m.-1 a.m. is the time of gallbladder, 2-5 a.m. – of lungs. The heart beats calmly, the temperature of the body is low, the level of glucose in blood decreases to the minimum. Many important processes take place in the organism. 5-7 a.m. is also the time of the large intestine. It is a favourable to time to remove larger amounts of unnecessary materials from the organism – if you or a child cannot sleep, try drinking a glass of warm water.

Finalising the discussion about the rhythm of organs, if you observe constant ailments during the periods of their intensive operation or you wake up at the same time at night, take care of it. Do not forget that correct and appropriate eating might be very helpful in such cases.

1.2 CONCLUSIONS

A child trusts his parents, relatives and other adults whom he respects and feels close (for instance, kindergarten nurses, nurses at home), while trusting she/he subconsciously hopes that offered food is wholesome and healthy, just as the milk of the mother which a baby gets from the first days of its life. Children like and value things that comply with their personal needs, what is prepared with commitment and love. Food ration of children should include as much vegetables as possible (seasonal, or naturally fermented in other periods of the year), cereals, better whole, non-refined, potatoes, pasta (of whole grain as well). Menu of children must contain variety, dishes should not be repeated during the day nor the week.

Quality ingredients composed appropriately, whole grain, whole fruit, vegetables, some meat, fish, reasonable thermal processing, rhythm of eating, small portions, attractive food and positive environment as well as the company of close people – this is what is required for the nutritional fulfilment every day.

To teach a child all this must be the main task of eating education during the first seven years of his/her life and continued during the rest of the years of childhood. Then one can expect that she/he would accept these habits as natural ones in adolescence and as an adult.

2 FOOD PLANNING

Planning menus and meals can be seen as a potential tool to compensate for the shortage of time and to encourage the preparation of homemade and healthy food that is directly linked to the intake of quality food. The person in the family responsible for nutrition must know that:

- Planning not only saves money, but it rescues the family from the annoying dilemma of "what shall we cook for dinner?".
- Through the good action plan on food shopping and the avoidance of impulsive purchases, it can help to halve the weekly cost of food.
- You can plan the dishes with a product to enjoy more than once - a roast chicken which next night can be used to make a chicken soup or lamb to be used for the preparation of a shepherd's pie.
- Children can help! In this way, they become braver and more responsible when they see that their views on what to feed the family are taken into account.
- Get rid of stress. Planning the weekly menu turns annoying dinner planning into fun. Seriously!
- Your family will begin to eat healthier without even realizing it. It's easy to balance the food that your family can consume when you prepare the menu for each week.
- Planning the weekly menu is not a rule of thumb though. The best practitioners in the field say that it takes time for everyone to find its rhythm.

Menu planning and nutrition means planning a diet that not only provides children, but also the whole family with all the necessary nutrients in the right proportions and quantities or, in other

words, to ensure healthy and balanced nutrition. This is important because the well-being and family health depend on what its members eat. For every household that has decided to prepare the menu in advance for a certain amount of time (usually a week), this activity proves to be a real challenge, but once they start they realize that it is actually a pleasant and rewarding experience.

But what are the characteristics of a good menu planning and meals? We should not forget that food should be, first of all, delicious and then nutritious, as the majority of children and adults will not eat anything they do not like, even if it is of excellent nutritional value. However, appetite is largely a pleasant preconception of food and is not dependent only on hunger but also on the taste, texture, appearance and attractiveness of food, on the pleasant environment we eat.

In this line of thought, the planning of the menu is both art and science: art in the skilful mixing of colours, textures and tastes and science in a sensible and informed choice of foods for a healthy and balanced diet.

2.1 WHY IS IT IMPORTANT TO PLAN THE MENU?

Menu planning and meals contribute to the maximum utilization of material, time and financial resources in order to prepare food that meets the family's physical, social and psychological needs. It is very important to plan the meals you will prepare to satisfy the nutritional needs of everyone at home and especially the children, since proper nutrition is essential for them to grow healthy, not to suffer and not to experience any deficits. Planning meals saves time, effort and energy.

The menu can be planned according to the family budget. A rich diet is possible without the purchase of expensive foods. Preparing a pre-menu allows the selection of different foods even from the same food group, thus avoiding monotony. In addition, the use of a variety of foods in the preparation of meals is also important in terms of the supply of vitamins, minerals and nutrients contained in individual food groups. Planning helps to effectively establish and enforce the type of diet the family chooses to follow. The food products to be purchased, their quality and price, the way they are stored, prepared and served can be easily envisaged.

Objectives of menu and meal planning:

- Satisfying the nutritional needs of each member of the family.
- Limiting food costs within the family budget.
- Use of cooking methods that maximally preserve the nutrients in the products used.
- Saving time, effort and energy.

- Serving attractive and appetizing dishes.

Planning the menu and meals depends on several factors:

NUTRITION NEEDS. The food that is to be prepared must meet the needs of each family member. These needs are different according to the age, sex, activity and physiological condition of each of the family members. The best way to ensure this is the choice of foods from all food groups (cereals, fruits and vegetables, dairy products, meat and other proteins, fats and sweets). Different nutritional needs, however, do not necessarily require the preparation of individual meals for each of the family. The diet can be planned in such a way that, while preparing the same food, the nutritional needs of each family can be satisfied, for example by increasing or decreasing the amount of a particular food, or by adding protein foods to the dish when there are children for whose growth they are important. The same salad can be used for overweight people and for those with normal weight if you just skip the dressing from the first.

SAVINGS. The family budget that depends on the socio-economic status also influences the planning of the menu. Much of the income is spent on food. That is why funds must be spent reasonably in order to achieve maximum utilization. Although the budget of the average family cannot provide the food that the wealthy families can afford, it can still offer diversity and choice. Lower-income families have fewer choices and often menus are mainly made from cereals. The challenge they face is the achievement of balanced nutrition, which requires the addition of food from the other four groups. And despite the difficulties, achieving a balance is not impossible. In this connection, it is better to know cheaper alternatives to expensive recommended foods (replacing meat with soy, for example).

AVAILABILITY OF COMFORT AND HELP. The time spent in preparing food depends on what part of the family is involved in the process, the use of ready-made foods (cans, milk, salads, cheese, etc.) and the availability of various household electrical appliances - kitchen robots, blenders, baking devices, etc., which save time and effort. However, time as money needs to be properly budgeted and allocated in order to be used as efficiently as possible, as in most cases the person responsible for food at home works and has official duties that he has to observe.

SATIETY VALUE. Each dish should include foods with a high satiety factor so that the person feels sated to the next meal. Proteins and fats have a higher satiety than carbohydrates. For example, a breakfast including only tea and toast cannot provide enough satiety until noon, while breakfast including milk, cereals, eggs and fruits can saturate the person until the next meal.

PERSONAL TASTE PREFERENCES. Although the recommended dietary intake for each food group should be respected, it should not be forgotten that every person has a preference for certain foods, and this is particularly true for children. An antipathy to a food very often causes it to be completely excluded from the person's menu, as is the case with milk, for example. The better solution is to change the form in which you consume the food rather than completely unplug it - milk can be taken in the form of cheese, cottage cheese, cream, sauce or dessert.

RELIGION, TRADITIONS, CUSTOMS. They are important to many families in defining the foods to include in the diet, the type and the way the dishes are served. For example, Muslims do not eat pork, while Hindus do not eat beef. Rice symbolizes abundance and prosperity during weddings and festivals.

FOOD MISCONCEPTIONS IN THE PUBLIC DOMAIN. Frequently misleading information about different types of foods and food products is gaining more popularity than real information about their nutritional value and composition. Thus, when planning the menu and the meals, it is good to be well informed and not to succumb to such suggestions and nutritional delusions so that the dishes you prepare can be really nutritious and useful.

CLIMATE AND AVAILABILITY OF FOOD. In the past, people's eating habits were predominantly determined by food produced in a particular area or region. Today, however, modern and improved storage and distribution methods allow even the most perishable foods to be available almost everywhere. The large variations in food patterns around the world depend to a large extent on what foods are delivered and, of course, the climate. In this regard, the diet should mainly include seasonal foods. It would be a good idea to plan the menu and meals in line with the annual season, such as warm soups during the winter and fresh salads and fresh juices in the summer.

DIVERSITY - it's very important, though nobody likes to eat the same food, even if it is very fond of it. That is why do not repeat the same foods in the daily menu. Diversity is also achievable by including different types and groups of foods that can be offered in pleasant colour combinations, with a sophisticated blend of soft and crispy foods, light and strong aromas, hot and cold dishes. It also contributes to the preparation of interesting and attractive dishes combining different textures, colours and flavours that in turn increase appetite and become a real delight for the mouth. The different methods of food processing also open new horizons - cooking, baking, steaming, and using fresh foods.

ENGAGING THE FAMILY. When planning meals, it is good to keep in mind the commitment of each family member, their timing, meal times, home and out-of-home meals. For example, if it is necessary to prepare lunch for schoolchildren, it is advisable to provide products and foods that can be packed and yet retain their taste and nutritional qualities.

SIZE AND COMPOSITION OF THE FAMILY. The size of the family influences the food that can be prepared. It is well known that money spent on food per person decreases as the family increases when family income stays constant. Products such as wheat and rice are bought in larger quantities, but the amount of milk, vegetables and fruits is decreasing. But this affects the quality of the family diet. Family composition also reflects on the type and amount of food needed and the way it is served. For example, when the children are under 5 years of age, more milk is needed, the number of meals is higher because a small child cannot take large quantities at one time. As the child grows, the diet changes, and it is already in line with school engagement and school hours. This

often causes the need for a home-cooked breakfast or lunch that the child can consume at school.[20]

The perfect menu, however, is not the one that includes only your favourite foods or just what you like to prepare or bake, but what is useful and healthy for the whole family. It comes to help in those evenings where you do not have time to cook, take into account your son's allergy, for example, or your daughter's diets, and can fit very well into the family budget - or, in other words, good menu planning should be tailored to your needs and to those of your family.

THE FIVE most important things that need to be considered when planning the menu and family meals are:

PLAN FOR THE EVENINGS, FOR WHICH YOU DO NOT HAVE TIME TO COOK.

Before designing the weekly menu, for example, think about what the family has to do during the week. Are there any activities that will take longer time, so you will be late and will not have enough time to cook. Do you have a planned workshop that can last longer than expected? Help yourself by planning your dinner for these days. You can predict the preparation of a quick recipe, cold meats and salad, for example, or fresh vegetables sandwiches. Useful in such situations is the use of slow-cooking appliances in which you leave the products of your choice of meals all day long and after the whole family home to enjoy a delicious dinner.

UNDERSTAND WHAT YOUR FAMILY LIKES TO EAT.

While it is not a good idea to always keep up with your children's preferences about the food they eat, since they are not always healthy, it is important to keep up with the weekly menu to some extent also with their taste, because although they may not like all the dishes you serve, you are more likely to have empty dishes and full stomachs if you offer them at least a few foods that you know they definitely love. Think about dishes that the whole family loves and consumes with pleasure. If you are tired of preparing your favourite spaghetti Bolognese, try to diversify the recipe with the addition of new, different spices.

THINK OF THE YOUNGEST FAMILY MEMBERS WHO MAY HAVE TO HAVE LUNCH/DINNER EARLIER.

Generally, the idea of sharing a meal around the family table is wonderful, but in reality there are stages in the lives of children who have different regimes from adults (babies, young children). At a time when they cannot sit on the table alone to feed themselves, each parent would be more relaxed at dinner if the children are already well-fed and relaxed than hungry and nervous. To do this, plan a supper that your little children could have had before eating and which will remain so delicious to the dinner for the rest of the family - choose fast reheating dishes that can be left to snack Use a hot plate or some dishes you can leave in the slow cooking program of a "hot meal" program.

20 https://sol.du.ac.in/mod/book/view.php?id=1422&chapterid=1284

THINK ABOUT HOW LONG YOU REALLY NEED TO COOK.

When planning the dishes you prepare during the week, it is good to consider carefully how much time you will actually need to cook the dish. Provide fast dishes for the week days (salad, vegetable soups, etc.), and baking and dishes that require longer time in the kitchen leave for the weekend when you are more free.

Every family succumbs to the temptation of ordering ready-made food - whether for special occasions or just in case of lack of time and to have something available to eat at home. The ready meal is mostly expensive and the worse – it is unhealthy - high in salt, sugars, and fat. When it happens incidentally or on any special occasion it is acceptable to some extent, but with a view to protecting family health and finances, it is advisable to exclude such fast food options from the weekly menu plan. However, if your children insist on eating similar foods, you can teach them how to reproduce their favourite homemade foods themselves. Chicken bites, burgers, pizza and chips can be made at home, with the difference that they will be far healthier than those purchased from some fast food or restaurant. Planning the weekly menu should not mean the same "dull" dinner week after week. Diversify the foods included in the weekly menus with those you have not tried before. Bake some different cake, make guacamole or recreate your favourite Chinese dish.

3 BEHAVIOUR AT THE TABLE

The most important thing is culture,
becoming a cell of community and society,
that change that occurs not only when we play together,
but also when we eat together (Lansbergienė, 2011).

Table manners make one of the constituting parts of nutritional literacy that also embraces such topics as positive harmony, light and cosy atmosphere at the table. Cosy environment, maybe a candle on a table, words of gratitude pronounced together before or after the meal, may create miracles. We must think not only about what children eat but how the food is served, how the table is arranged, what table manners prevail.

It is very important that both family members and educators in educational institutions should instil appropriate table manners to children since the early days of their lives. This chapter is dedicated to discuss children behaviour at the table, to provide some advice how to educate proper table manners, what table manners are good, how right social skills can be developed.

3.1 TABLE MANNERS

This subchapter discusses literacy in the sphere of table manners. We aim to remind about several important rules of table manners and educate children so that they become cultured and literate in terms of table manners. All rules of proper behaviour at the table have a meaning and have not been invented just for the sake of binding people. When one knows the rules and constantly applies them to practice, especially if they are instilled from early age, she/he will never find her/himself in an awkward situation and would never feel tension, in the course of the time manners 'get sucked into blood'. Proper manners have come from customs, behavioural models and they are designed to make communication easier.

Table manners are the rules used while feeding, which may also include the inappropriate use of utensils. Different creatures observe different rules for table mans. Each family or group sets its own standards for how strictly these rules are not to be enforced.

TABLE MANNERS ARE (partly) what separates us from animal. However, sitting at a table and eating neatly, quietly and politely is something not a lot of us have mastered yet (Loftus, 2014). Whether you're headed to a date, a dinner party, or sitting down at your dining room table agreement across the world (Brown, 2017). Good manners show respect for others. There are cultural differences of course but there is a broad agreement across the world.

Growing up, our mothers reminded us not to put our elbows on the table, to put our napkins in our laps, and to chew with our mouths closed until one day, good table manners became ingrained in us. When we gather around a table to eat, our table manners may differ from others' manners, depending on where in the world they are (Willard, 2014).

There is a saying that people are welcomed according to their appearance and seen off according to their mind. However, behaviour and manners at the table can be also very eloquent about a person. Do we really know how (and why) to behave at the table? To avoid awkward situations and not to disturb people we are eating with, we should learn and remember the main rules of etiquette and install them to children since early age.

As parents or educators, you play a very important role in forming habits of your children. If you establish proper table manners, positive eating environment and show good example you can help your children to acquire right habits that can have a long-term impact on their correct behaviour and health (Dieticians of Canada, 2016).

Consistency is very important in the early stage of life; repetition helps children to perceive of requirements. It is not enough to talk to a child and expect that she/he will understand how to behave. The example set by parents, senior siblings is necessary because children

are inclined to imitate behaviour. All good advice will be soon forgotten if your children do not see you live by the standards you want to impart on them (Gustafson, 2009; Ana G, 2015). It should not be forgotten that children are not grown-up personalities, one should take into consideration their age; however, individual capacities for education, approaches should not be left aside either. It is enough to give your expectations once for some children, whereas others will need to hear it more often. Parents and educators have to work hard to establish clear rules. A child of 3-7 years age can perfectly keep to table manners, yet every family is free to choose how many and what rules children have to undertake (Lansbergienė, 2016).

3.2 CAPABILITIES OF A CHILD AND EDUCATION OF TABLE MANNERS ACCORDING TO THE AGE

From the very little of the years, children are learning table manners. Good manners show respect for others. There are cultural differences of course but there is a broad agreement across the world. Up to 3 years old, the skills of the child at the table are still not perfect, they may not be able to eat completely neatly. Rules of etiquette are important but change according to the circumstances and times

3.2.1 What are majority of 3-year-old children capable of?

Research shows that children (3-year-olds) who watch television 2 and more hours per day face overweight problems 3 times more frequently than three-year-olds who spend less time watching television (Ward, 2006).

Children should learn to say 'thank you', 'please' up to the age of 3 years. It is recommended to include new rules concerning table manners (Shaun Dreisbach), for instance, to concentrate on the food when eating, do not get distracted, ability to sit at the table – to sit for real, not to hurry or walk around the table – is the primary challenge, when one overcomes it other processes go on much easier. Start eating when everyone has gathered and sat down (if possible). It might be an opportunity to show how to use a table napkin. It is also important to teach children to chew with a mouth shut, not to speak with a full mouth, make appropriate use of a spoon, a fork, drink from a glass, use a table napkin and so on (Lollar, 2016). Most importantly, children should thank after having their meal.

3.2.2 What are majority of children up to 6 years of age capable of?

This is the age when children learn what kind of impact their actions have on other people. Children of this age have relatively god motoric skills, so they should learn to use a knife (Shaun Dreisbach).

Since the 4 years of age one may give a child a table knife to cut an apple or another soft fruit. Such task will encourage a child's self-confidence, courage in unknown environment, will help to develop motoric skills – linguistic competences, senses (Kancė, A.).

The time comes when it is not enough just to sit at the table throughout the whole meal, polite behaviour at the table is introduced (Lollar, 2016).

3.2.3 What are majority of children older than 6 years capable of?

To help to arrange the table according to etiquette requirements (c.f. subchapter 3.4), to clear the table after a meal, to say a compliment if she/he liked the food, restrain criticism (Lollar, 2016).

It is very important to teach children of this age how to pass food at the table; to teach how to put a meal into his/her own plate, when a spoon is used, when a spoon and a fork and so on; how to react if someone asks for bread (to pass the whole crib of bread, not a single piece). The older the children are the more motivated they get to behave properly to avoid awkward social situations.

If a child is already conscious enough and knows table manners, it is possible to teach him/her etiquette of communication at the table (cf. subchapter 3.4 Communication at the table)

From 8 - 10 years old. Child is probably flying solo at this age, she/he would be visiting his friends and would also be visited. This is the age when you should teach your child about being both a good host and a good guest. She/he should be taught to offer and serve the guests first before himself. Make sure he chats with everyone on the table, and strictly ensure that he does not bury his head into a cell phone or video-game[21].

21 https://www.beingtheparent.com

3.3 IMPORTANCE OF FAMILY MEMBERS EATING TOGETHER

Eating together
may be small everyday celebrations
of your family – enjoy them. (J. Lyttle and E. Baugh)

Agenda of parents and children is full of various activities. We do not even think about what we lose if we do not gather together as a family at the table. Families can frequently have breakfasts and dinners on workdays and lunches on weekends. Educational institution is a perfect place to set the example how everybody eats together at the same table.

It is very important to eat together. The benefits of the habit are clear: to small children "table talks" can be the main source of the dialogue, thoughts, expression of ideas and emotions of the family. It may help to build and strengthen relationships among family members (Fieldhouse, 2015). Family dinners often have a positive impact on children's values, motivation, personal identity, self-respect. Children who eat dinners together with their families are more inclined to understand, acknowledge and keep to the limits drawn by and expectations of their parents (Lyttle, Baugh, 2008).

Research also reveals that having dinner together with family at least four times a week has a positive impact on the development of a child. Family dinners are related to lower risks of obesity, abuse of drugs, eating disorders and higher probability to graduate from high school (Gibbs, 2006).

Scientific research shows that families who often eat together, talk more, eat healthier and more varied food. Children who eat together with their parents tend to think that parents are proud of them, so they achieve better results at educational institutions (Lansbergiené, 2011).

CASAColumbia has carried out a research and submitted a report claiming that family dinners were closely related to the prevention of drug abuse among adolescents. The research has identified the tendency that children who frequently eat their lunches or dinners with their parents expose lower risks to become subject to smoking, abuse of alcohol or other drugs ("The National Center on Addiction and Substance Abuse at Columbia University, 2011")

Regular eating with family creates possibilities for healthy eating and more. Eating together encourages proper development of both table manners and linguistic capacity (enriches vocabulary and so on) as well as social skills (Ward, 2006). By no means one should watch TV, surf the Internet or use a mobile phone.

Negative impact of TV and mobile phone, computer, other screen while we are eating. The problem itself does not come from watching television, computer but rather from when children eats without paying attention to the amount, the taste, smell, etc. The feeling of satisfaction because your brain is focused on other things, like what are watching. And eat more without realizing it, put food mechanically, which can cause, in addition to obesity, stomach pains (steptohealth.com, 2014).

But in the long run, your kid is missing out on learning important social skills that come from interacting with people instead of screens. This is particularly important for younger kids or those who are having trouble making friends. Meals are the perfect time to practice listening, paying attention to the person who's speaking and taking turns (Child Mind Institute, Understood Founding Patner).

Families who eat together less frequently choose fast food or junk snack, soft drinks (Lyttle, Baugh, 2008).

"A 2000 survey found that the 9 to 14-year-olds who ate dinner with their families most frequently ate more fruits and vegetables and less soda and fried foods. Their diets also had higher amounts of many key nutrients, like calcium, iron, and fiber. Family dinners allow for both "discussions of nutrition [and] provision of healthful foods" (cited of Matthew W. Gillman, MD, the survey's lead researcher and the director of the Obesity Prevention Program at the Harvard Medical School). Thus family dinners developed healthier eating habits (Klein, 2014).

Scientific research data has established the benefits of family eating together regularly (for both parents and children). The benefits include healthier eating habits, less obesity, better communication within family, less problems of behaviour, less watching television, less stress, better results at school (American College Of Pediatricians, 2014).

As parents, you play an important role in building the habits of your children. You have a great impact on the environment in the family where you cook and eat food together with your children. Early positive experience of food can help your children to develop healthy eating habits since the early age (Dieticians of Canada, 2016).

3.4 COMMUNICATION AT THE TABLE

While eating, mainly positive topics should be maintained as arguments at the table may result in a hurried eating and relate eating with stress (Alli, 2016). If you talk at the table do it slowly, in a relaxed manner, not too loudly, without interrupting another person. The tone of discussion should

be calm even if the topic is not a pleasant one.

While eating try to avoid topics that might excite people sitting at the table or raise sore, problematic issues. Eating has to relax and provide enjoyment.

By no means talk with your mouth full – if you want to reply to a question do it after you swallow your bite.

By involving children in a conversation teach them to listen and provide an opportunity to express their opinions. Talks at the table widen vocabulary and reading skills despite of social or economic status. Family dinners allow every member of the family to discuss their day and share exciting news. Make use of these pieces of advice to encourage conversation: discuss the day of a child, express interest in the everyday life of your child. Let all members of the family talk. Be an active listener and make sure that your child learns to listen as well.

When you eat in a restaurant, at friends or at home do not keep your telephone on a table – it may distract people around you. Moreover, it is impolite to talk to a phone at the table.

To make the most of your time together, parenting experts suggest asking the following questions. Make it dear your children can talk about anything and you'll listen. This is not conversational entrapment – getting a kid to spill the beans, only to come down on the child. Experts say it's important kids fell understood and can openly share whatever, say be on their minds. The topics needn't be serious or heavy, either (Fink, 2017).

If someone ask a question right when have put a bite of food in mouth, need to smile slightly, then can make a gentle gesture with hands. Do not rush through that bite, as tin will just make things worse (Brown, 2017).

Parent who eat with their families can connect with their children and find out what's going on in their lives. Topics to talk about at the table:

- The best part of your day
- Ideas for family activities
- The 3 favourite things about your best friend
- If you had one wish, what would it be?
- Share something you did that made someone else feel good
- Tell jokes or share a funny story (Vancouver Coastal Health, 2016).

3.5 INVOLVEMENT OF CHILDREN IN COOKING

Involvement of children in cooking is an excellent means to try new recipes, discuss products, learn to cook and process them properly. Cooking together with children also gives an opportunity to share traditions, know different cultures and spend time together (Dairy Farmers of Canada, 2017). During this activity you will be able to watch how your children choose products and teach them about healthy eating, encourage their self-confidence. Besides, children might be more inclined to eat and try new healthy products if they cook them themselves (Alli, 2016).

Choose a day to try another cuisine or a healthier meal. Replace old recipes with healthier alternatives. Organize thematic cuisine evenings, such as Italian, Mexican, or Caribbean. Create recipes of your own family (Lyttle and Baugh).

Children who help in arranging the table, cooking or clearing the table after the meal have more respect for the work of others, understand the needs of others better (Ana G, 2015).

Eating together adds to a better development of children. The feeling of safety and community when family eats together adds to the emotional development of a child. If a family eats together regularly, it has a positive impact on the values of children, strengthens their motivation and self-confidence; children are readier to perceive of and acknowledge the authority of parents and undertake common human values (Lyttle, Baugh, 2008).

Enjoy products of food from four groups: every day eat more vegetables, fruit, cereals, dairy prod-

ucts, lean meat, legumes, eggs and fish. If your children see you eating these products, they will be more inclined to eat them as well.

Limit products that have much calories, fat, sugar and salt. Food that contains much calories, fat, sugar and salt, such as cakes, chocolate, biscuits, donuts, ice-cream, fries, chips, soft drinks, sweet hot and cold drinks. If you refuse these products yourself, your children will not seek for them either. It is very important that these products should not be labelled as 'bad' or forbidden with no apparent reason, impact on children health or so. These are just products that should be consumed only rarely and on limited amounts (Vancouver Coastal Health, 2016).

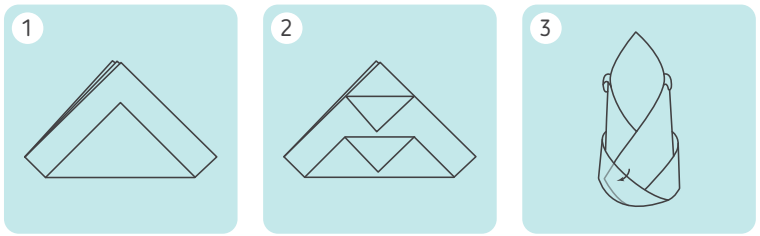
3.6 EATING RULES

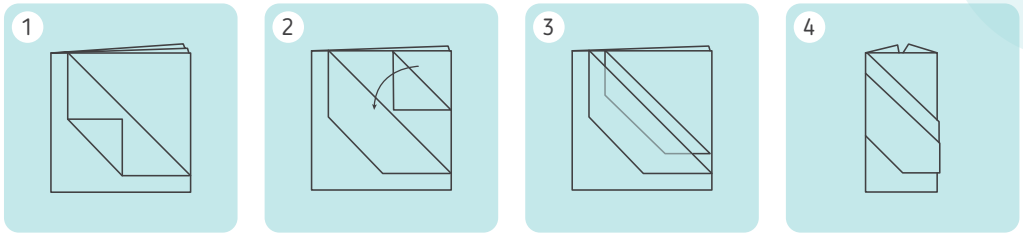
- **Start eating when everyone at the table has their dishes full**. When everyone gathers at the table, one should start eating only when everyone has their meals and do not listen to those saying 'eat, it will get cold, do not wait until I am served'. According to table manners, that would be a sign of great disrespect to those at the table.
- **Do not watch television** when eating and put aside all devices that might distract your attention (Alli, 2016; Ward, 2006; Lyttle, Baugh, 2008). This is not only a rule of etiquette – eating while you are distracted by some external factors is harmful to your health. Children of school age that have normal weight and have a habit of eating while watching television have a tendency to eat more and overeat as they do not perceive the sense of satiety and the food is digested less efficiently (Ward, 2006).
- **Try to eat only at the dinner table** (Alli, 2016)
- Eat calmly, without hurrying, do not champ. When you mix your drink with a spoon try not to touch the brims of a cup. Other cutlery should also be used silently: do not scratch the plate with a fork or a knife, do not clatter with a spoon (Gamtos grožio formulė, 2016).
- It is impolite to cool your meal by blowing at it. Better wait some minutes.
- One should also know how to cut food. Do not cut the whole meal at once: cut another bit only when you have swallowed the first one.
- Concerning eating at home, eat in such a way that the plate still looked in order, aesthetically and beautifully, so that if someone take your plate from you at any moment of your eating she/he could proceed eating the meal without diminishing aesthetical satisfaction.
- When you eat with a spoon hold it in the right hand and scoop your food from the side of the plate, not from the front of it. Scoop the soup in the direction away from you. At the end, do not get the idea to drink the rest of the soup by turning your plate over as a mug – that would be greatly impolite.

- Eating with hands is allowed if there is a damp napkin or a bowl with water and lemon on the table. Following etiquette rules, mussels can be eaten with hands (one cannot take the shells otherwise), ribs, some poultry meals with bones. It is impolite to suck fingers.
- In between the meals, try to keep you hands on the table, yet avoid putting your elbows on it – support your-self on forearms and by no means sway on a chair.
- One should not push dishes after the meals or stack them in a pile; it is also impolite to put them on another table.
- According to etiquette, empty dishes are taken away when all sitting around the table finish eating (chewing) and none is put to in an awkward situation or hurried. Eating together at once comes as a small family celebration for you - enjoy them (Lyttle, Baugh, 2008).
- **Try not to use food as an award or punishment.** Taking food for punishment may force children to worry if they will get enough food. For instance, if children are sent to bed without dinner it may cause their anxiety about hunger. To use sweets loved by children as a reward for eating is also not the best decision as it may lead to an assumption that these products are better than food and thus more valuable. For instance, if one promises dessert in case a child eats all the vegetables, a wrong message about vegetables is transmitted (Alli, 2016). Dessert should be treated as food, not a reward for proper behaviour. Manipulation with food is never rewarding as a means of negotiation (Gustofson, 2009).
- Let your children take as much food as they wish at that time or ask what would be enough. A research shows that children can choose appropriate amounts of food while being of pre-school age, around the 4th year of life (Ward, 2006).
- Encourage everyone participate and stay at the table until the dinner ends. This will require consistency and your strong will (American college of paediatricians, 2014)
- Dedicate at least an hour for eating together, communication and arrangement of the table before and clearing it after the meals together.
- Eating together with children of such age is a process of socialization. Though children like to roll their eyes and sigh, parents must retain friendly yet strict position. If a child says 'I won't eat this', parents should reply 'OK, but there is nothing else'. It is time to talk about democracy – rights and duties. It is high time to say to a child 'You have a right not to eat, but also have duty to sit with your family' (Lansbergienė, 2016).
- **Be a positive example**. Parents can have a positive impact on their children's eating habits by setting a good example. Never forget to thank those who cooked food or, if in a restaurant, the one who invited. Praise food, evaluate pleasant communication. Let the word of thanks be short, but sincere. Never express your disappointments aloud.

3.7 PREPARATION FOR EATING

You may give an assignment to a child to fold table napkins. It helps to develop minor motoric skills, which in its turn, develops linguistic skills, creativity. One may find a great variety of folding patterns on the Internet that children can deal with without great difficulty. For example:





You may use napkin-rings when you place napkins on the table. Napkin-rings are used to reduce the amount of touch before the napkins are placed on the table. A napkin is rolled into a tube and put inside a ring.

The primary function of table-napkins is not to clean one's lips or hands and thus soiling them in any case, but to protect clothes. The tradition of using table-napkins comes from the Ancient times; it became widely spread in the Roman Empire, yet King Luis XIV of France in 17-18th c. was practically the first who created the principles of using table-napkins. Eating by small bits appeared in his court and those who were able to eat without soiling their face or hands, contrary to earlier traditions, were greatly admired.

Before starting to eat unfold a cloth napkin (if there is such on the table) and place it on your lap. When a person is leaving the place at the table after eating, the napkin should be placed on the table, on the left side and not left on a chair.

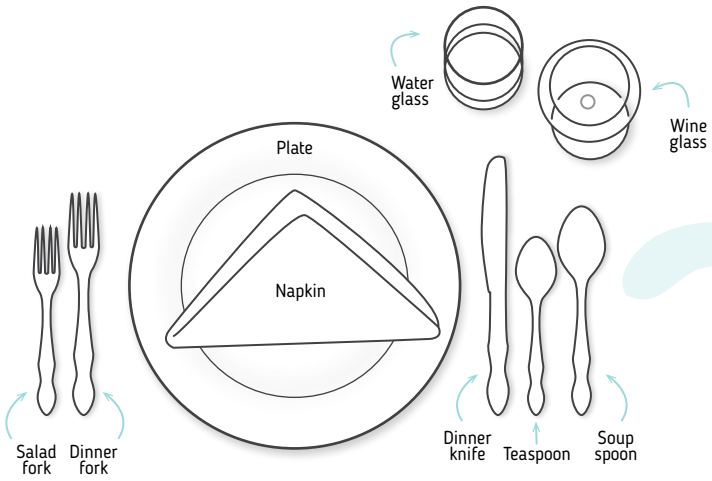
3.8 TABLE ARRANGEMENT RULES

The discussion of the arrangement of the table should start form the positioning of cutlery and dishes.

Dishes are lined up straight, a bit further from the edge of the table. In case of ordinary arrangement, each guest gets a large flat plate that serves as a tray. A refreshment plate is put on the top of it, if there is no a refreshment plate, then a soup plate. Putting salad and meat on a plate-tray is a clear evidence of bad education. A small dessert spoon is placed behind the plate-tray, a bit to the right – a glass for water. A small flat plate for bread is placed to the left from the plate-tray; the

same small plate is used to put fruit leftovers when the meal is going to an end.

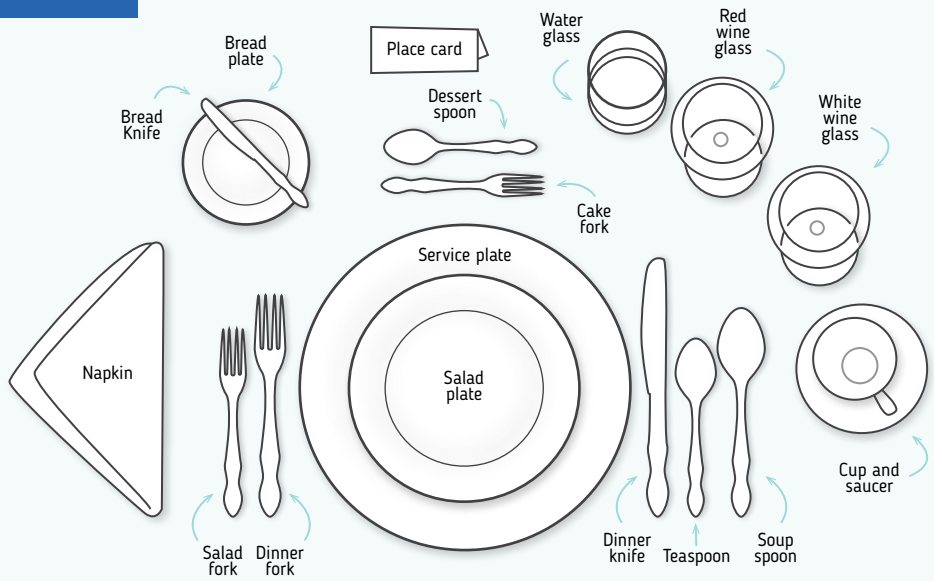
INFORMAL



Utensils are placed one inch from the edge of the table

Figure 10. *Arrangement of the table*

FORMAL



Generally aren't placed on the table until the dessert course

3.9 CUTLERY

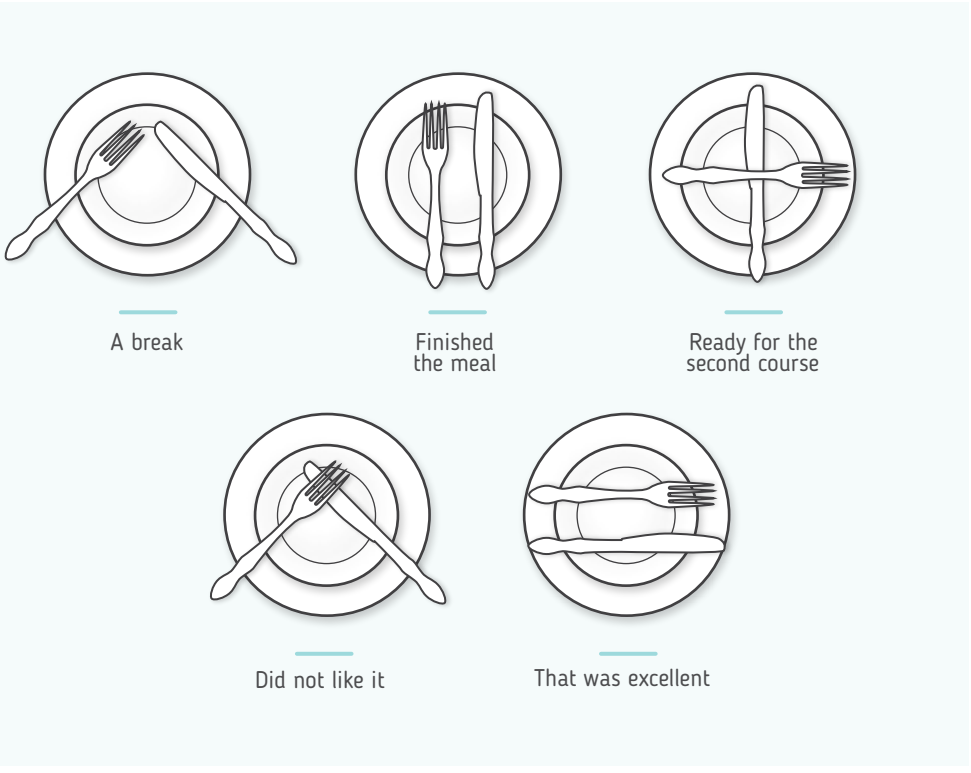
Different cutlery was designed for almost every dish. It is practically impossible to remember them all, yet knowledge has great value.

In Europe, forks are placed on the left side, whereas knives on the right side of a plate. Those pieces of cutlery that will be used first are placed furthest from the plate; those that will be used the last are positioned closest to the plate. In ordinary cases, a fork and a knife for refreshments are placed furthest from the plate. Cutlery for fish and salad, depending on what will be served, are put in the middle. Cutlery for the main course are put closest to the plate and these are normally the largest pieces of cutlery. Cutlery for desserts is placed behind the plate. Knives are placed with blades facing the plate, forks with their points directed upwards, spoons with their backs positioned on the table.

What is important to learn in a kindergarten: one must hold cutlery like a pen, with three fingers: pressing it with a thumb, index finger and the middle finger, not squeezed in a fist.

Having finished the meal, cutlery should be placed in the middle of the plate: blades of a knife facing inwards, fork placed on the left of the knife with its points directed upwards.

Figure 11. *Significance of cutlery arrangements*



3.10 WHAT EVERY CHILD SHOULD KNOW

- Come to the table with clean hands and face
- Place a napkin on your lap
- Start eating with all the rest
- Sit straight
- Do not talk with full mouth
- Talk to everyone at the table
- Thank after eating
- Offer assistance to clear the table.

(Björkman, 2008)

3.11 CEREMONIALS OF EATING

A golden rule while being at the table: enjoy the eating. Whatever you eat, especially if it is a meal of breakfast, lunch or dinner, do it without a hurry, in a calm and pleasant environment. This is very important because if you stuff your food quickly you do not have the feeling of satiety and satisfaction. Eating together with one's family and friends or in a kindergarten together with groupmates means something more than just food on a plate. Sharing food and experience of life helps to establish oneself, resist physical ailing, stress, emotional problems and feel more joy and pleasures of life. Arrangement of the table, the light of a candle, attractive dishes, order – all theses details are significant.

Choose products that differ in colour, texture and flavour, especially in winter when we lack colours and light so much.

When serving meals to children ornament them playfully (e.g., add berries or dried fruit to porridge, make little mountains out of rice, mashed potatoes or vegetables, add some liveliness to a flat meal – make eyes out of peas, a carrot nose, a beat-root mouth, etc.), organize ingredients of a meal neatly, prepare and serve food with love and warmth.

Prepare the table before eating. You may give this assignment to children: you may begin doing it together and when they learn, allow this to be their task. This will not only give them joy but will

also help to develop their culture, knowledge of etiquette.

Create nice environment. Light a candle before eating (it may be placed on the table all the time – it will give permanent cosiness and you can light it before eating), take each other's hands, thank for food, set an internal smile for yourself. Little thanksgiving prayers said in Waldorf kindergartens might be a suitable example: "The Earth raised these fruit, The Sun has warmed them, thank the Sun, thank the Earth that they feed us all. Enjoy the meal"; "Thank you Earth for tasty bread, thank you Sun for a light day, thank you mom and dad for everything, thank you God that I can grow up". Do not forget to thank even with a simple 'thank you' after the meal.

Pre-school age children are more observant and picky about food, so it is very important how it is served, it even should be called somewhat attractively. Try to make the procedure of eating pleasant wherever and who ever you eat with and make food on the plate attractive to both eyes and soul.

Short summary

When we teach our children, the basic manners of saying thank you, sorry, please or wishing the elders or any other etiquette, we should remember that table manners also form a big part of our basic etiquette. Children need to be well versed with the table manners that they are supposed to follow, whether at home or in public.

Good manners show respect for others. There are cultural differences of course but there is a broad agreement across the world.

Essentially, if a family stresses on manners and a child grows up seeing things happening in a definite way, it gets inculcated in him naturally. However, if you have a casual lifestyle, you need to consciously imbibe some good habits so that your child picks them up gradually.

Different cutlery was designed for almost every dish. It is practically impossible to remember them all, yet knowledge has great value.

Mentioned about what every child should know, for example: come to the table with clean hands and face, place a napkin on your lap, start eating with all the rest and others important facts.

A golden rule while being at the table: enjoy the eating. Whatever you eat, especially if it is a meal of breakfast, lunch or dinner, do it without a hurry, in a calm and pleasant environment. One of the most important thing is eating together. Eating together adds to a better development of children. The feeling of safety and community when family eats together adds to the emotional development of a child. If a family eats together regularly, it has a positive impact on the values of children, strengthens their motivation and self-confidence; children are readier to perceive of and acknowledge the authority of parents and undertake common human value.

4 FOOD PREPARATION GUIDELINES FOR ALL

Young children are at a higher risk of getting sick from contaminated food because their immune system is still developing. Children are also more vulnerable to complications from gastroenteritis, such as dehydration. All food must be protected from contamination.

Food contamination can be:

- biological – such as bacteria that may cause vomiting and diarrhoea. Serious cases can lead to paralysis and death;
- physical – such as foreign objects including insects, glass, plastic or metal. These can cause choking and broken teeth;
- chemical – such as cleaning products, fly spray and naturally occurring toxins and allergens. These can cause poisoning and severe reactions.

For those reasons, food safety is particularly important in the preparation of foods for children.

4.1 FOOD SAFETY: DEFINITION

Food safety is a scientific discipline describing handling, preparation, and storage of food in ways that prevent food-borne illness. The occurrence of two or more cases of a similar illnesses resulting from the ingestion of a common food is known as a Food-borne disease outbreak. This includes a number of routines that should be followed to avoid potential health hazards. In this way food safety often overlaps with food defence to prevent harm to consumers. The tracks within this line of thought are safety between industry and the market and then between the market and the consumer. In considering industry to market practices, food safety considerations include the origins of food including the practices relating to food labelling, food hygiene, food additives and pesticide residues, as well as policies on biotechnology and food and guidelines for the management of governmental import and export inspection and certification systems for foods. In considering market to consumer practices, the usual thought is that food ought to be safe in the market and the concern is safe delivery and preparation of the food for the consumer.

Food can transmit pathogens which can result in the illness or death of the person or other animals.

The main mediums are bacteria, viruses, mold, and fungus (which is Latin for mushroom). It can also serve as a growth and reproductive medium for pathogens. In developed countries there are intricate standards for food preparation, whereas in lesser developed countries there are less standards and enforcement of those standards. Another main issue is simply the availability of adequate safe water, which is usually a critical item in the spreading of diseases. In theory, food poisoning is 100% preventable. However this cannot be achieved due to the number of persons involved in the supply chain, as well as the fact that pathogens can be introduced into foods no matter how many precautions are taken. The five key principles of food hygiene, according to World Health Organisation, are:

- prevent contaminating food with pathogens spreading from people, pets, and pests;
- separate raw and cooked foods to prevent contaminating the cooked foods;
- cook foods for the appropriate length of time and at the appropriate temperature to kill pathogens;store food at the proper temperature;
- do use safe water and safe raw materials.

4.2 EUROPEAN FOOD SAFETY POLICY

Protecting the health of humans, animals and plants at every stage of the food production process is a key public health and economic priority. The European Union's food safety policy aims to ensure that EU citizens enjoy safe and nutritious food produced from healthy plants and animals, whilst enabling the food industry — Europe's largest manufacturing and employment sector — to operate in the best possible conditions. EU policy safeguards health along the whole 'agro-food chain' — every part of the food

production process from farming to consumption — by preventing food contamination and promoting food hygiene, food information, plant health and animal health and welfare.

Its three general objectives are:

- to ensure that food and animal feed are safe and nutritious;
- to ensure a high level of animal health, welfare and plant protection;
- to ensure adequate and transparent information about the origin, content/labelling and use of food.

The task to ensure healthy food is a cross-border issue because much of the food we eat crosses borders. The EU is a single market: goods, including food, can be sold freely all over the EU. This gives consumers a much wider choice and lower prices, due to increased competition, as compared to when food could only be sold within a country. However, this also means that the most important rules for quality and safety must be set as European-wide laws. There could not be any free trade if every product had to be controlled in each country according to different rules. Those different rules would also mean that producers in some countries would benefit from unfair competitive advantages. Moreover, agricultural policy as a whole is an EU competence, which gives the EU the possibility to influence the quality and safety of our food via the rules and economic support that are agreed for farmers. Thanks to these EU rules, European citizens benefit from some of the highest food safety standards in the world. Compulsory checks take place throughout the agro-food chain to ensure that plants and animals are healthy; and that food and animal feed is safe, of high quality, appropriately labelled, and meets strict EU standards. In the modern global marketplace, there are many challenges in maintaining these standards.

They include:

- preventing animal and plant diseases from entering and circulating in the EU;
- preventing the spread of disease from animals to humans. There are currently over 200 diseases which can be passed to humans from animals through the food chain, for example salmonellosis: poisoning caused by salmonella bacteria;
- ensuring common rules are maintained across the EU to protect consumers and prevent unfair competition;
- protecting animal welfare;
- ensuring consumers have clear, unambiguous information on the content and origin of food;
- contributing to global food security and providing people with sufficient access to safe, quality food. By 2030, it is predicted that there will be a need to feed 8 billion people with an increased demand for meat-rich diets. World food production must increase by at least 40 % to meet that need and 80 % of this increase will need to come from more intensive crop production.

The basic principles for the EU's food safety policy are defined in the EU's General Food Law, adopted in 2002. Its general objectives are to facilitate the free trading of food across all EU countries by ensuring the same high level of consumer protection in all Member States. The EU food law deals with a wide range of issues related to food in general and food safety in particular, including food

information and animal welfare. It covers all parts of the food chain from animal feed and food production to processing, storage, transport, import and export, as well as retail sales. This integrated approach means that all food and feed produced and sold in the EU can be traced from 'farm to fork' and that consumers are well informed on the content of their food. The EU food law also establishes the principles for risk analysis. These stipulate how when and by whom scientific and technical assessments should be carried out in order to ensure that humans, animals and the environment are properly protected. This common approach ensures that minimum standards apply throughout the EU. It helps EU countries to prevent and control diseases, and to tackle food and feed safety risks in a coordinated, efficient and cost-effective manner.

4.3 WHAT THE EUROPEAN FOOD SAFETY POLICY CONSISTS OF

Consumers should be confident that the food they buy in the EU is safe. The first EU food hygiene rules were introduced in 1964. Since then, they have evolved into a pro-active, coherent and comprehensive tool to protect human, animal and plant health as well as the environment. They also help to ensure that trade in food and feed happens smoothly.

» Precaution and scientific advice

EU's food policy is based on solid science and thorough risk assessment. The EU institutions are guided by the work of scientific committees and by independent scientific advice from agencies such as the European Food Safety Authority (EFSA). EFSA was set up in 2002 and is based in Parma, in Italy. It carries out risk assessments before certain foods are allowed to be sold in the EU. EFSA provides scientific advice to the European Commission and EU countries, to help them take effective decisions to protect consumers. It also plays an essential role in helping the EU respond swiftly to food safety crises.

» Controls

Under EU rules, rigorous checks are carried out to ensure that all products entering the food chain meet the relevant standards. They include tests for harmful residues from veterinary medicines, pesticides and contaminants such as dioxins. EU inspectors also visit farms and businesses associated with the production of food. National authorities carry out checks at the EU's borders to ensure that food and animals coming from outside the EU meet the European standards.

» Additives and flavourings

Food additives and flavourings are chemical substances intentionally added to food to improve its flavour, texture and appearance, or to prolong its freshness. Such products are regulated to ensure they

do not pose any risk to human health. All food additives used in the EU — including preservatives, colours and sweeteners — are scientifically checked to ensure they are safe for human health before their use is allowed. This is done on a case-by-case basis. Once authorised, their use is most often limited to specific quantities in certain foods. EU rules also mean that any food additives used must be clearly labelled on the product's packaging. Flavouring substances may only be used in foods if they have been scientifically proven to pose no risk to consumers' health. In the EU, there are over 2100 approved flavouring substances, and around 400 are currently being analysed by EFSA.

» Safe limits for food contact materials

The 'food contact materials' concept includes any material that comes into contact with food, for example packaging, processing machines, cutlery and dishes. EU rules establish the basic requirements to ensure these materials are safe. All substances used in the production of plastic food packaging, for example, have to undergo a safety assessment by EFSA before they can be authorised in the EU. The current EU laws state that food contact materials should not trigger any chemical reactions which might change the food's taste, appearance, texture or smell, or alter its chemical composition.

» Limiting feed additives, plant and veterinary product residues

EU rules require animal feed additives, veterinary medicines and plant protection products to undergo a full scientific evaluation to prove they are safe for humans, animals and the environment before they can be authorised. If they are not safe, they are banned. In some cases maximum limits are set for how much residue there can be in the feed.

» Improving food hygiene

Bacteria, viruses and parasites can pose a serious risk to public health if strict food hygiene procedures are not followed. Well-known examples include illnesses linked to salmonella in poultry; listeria in dairy, meat and fishery products, and BSE in cattle. To protect EU citizens from these risks, EU rules require a comprehensive and coordinated approach to food hygiene across the food chain in all EU countries. Primary responsibility lies of course with the companies and people producing and selling the food. They have to apply compulsory self-checking programmes. The EU introduced salmonella control programmes in 2003 for poultry flocks in all Member States. These programmes ensure that proper and effective measures are taken to detect and to control salmonella and other zoonotic bacteria at all relevant stages of the production chain. Preventative action is taken mainly at the level of primary production, in order to reduce their prevalence and the risk they pose to public health. In addition to these control programmes, other control measures along the food chain, during slaughter, processing, distribution, retail and food preparation, also take place. As a result, cases of salmonellosis in humans dropped by 60.5 % in the period 2007 to 2011 and cases linked to eggs and egg products fell by 42.3 % in the same period (a decrease from 248 to 143 cases).

» Reducing food contamination

EU rules on contaminants are based on the principle that contaminant levels should be kept as low as can be reasonably achieved by following good working practices. Maximum levels have been set

for certain contaminants (e.g. dioxins, heavy metals, nitrates) on the basis of scientific advice in order to protect public health.

» Promoting better nutrition

In today's EU, five of the seven biggest risk factors for early death are linked to what we eat and drink: high blood pressure, cholesterol, body mass index, inadequate fruit and vegetable intake, and alcohol abuse. Individual EU countries, not the EU, have the competence to the deal with public health measures than can address these challenges. However, certain initiatives are coordinated at EU level, for example: within the framework of the EU platform for action on diet, physical activity and health, and the high level group on nutrition and physical activity. Both bring together representatives from across Europe to tackle diet-related health issues such as obesity and diabetes.

» Supporting food innovation

'Novel' foods are foods, or ingredients, which, in the past, were not significantly used for human consumption. In the EU, the legal definition is that they were not used before 1997. Examples include sucromalt, a mixture of saccharides (sweeteners) that is rich in maltose, and guar gum, a white flour-like substance made from guar beans, both authorised for marketing in the EU in 2010. All novel foods or ingredients authorised for sale in the EU have undergone a scientific safety assessment. When the authorities give permission to novel foods, it includes specific conditions of how they can be used and how they must be labelled.

» Clear labelling

EU food labelling rules mean that consumers receive comprehensive, accurate information on the content and composition of food, to help them make informed choices about what they eat. Food must be clearly labelled with key information on allergens and nutritional value, including the energy, fat, saturated fat, carbohydrate, sugars, protein and salt content. Food labels also include information on the manufacturer, seller, importer, storage conditions and preparation of certain foods. It must be impossible to remove the labels, and they must be easy to see, read and understand.

» Accurate health claims

EU rules on nutrition and health claims refer to cases where the producers want to present food as being beneficial to health, for example on labels or in advertising. Statements like 'contributes to the normal function of your heart' or 'reduces cholesterol' are examples of such claims. This is only allowed when the claim is scientifically substantiated and has been confirmed by an assessment from EFSA. In addition to the 31 permitted nutrition claims, in May 2012, the EU agreed to authorise 222 health claims following more than 4 600 applications (European Commission).

» Promoting high quality and traditional foods

Labelling rules also make it easy for consumers to identify organic food, quality products or foods produced in a certain way. Specific EU logos are used for products linked to a specific geographical origin: protected designation of origin (PDO) and protected geographical indication (PGI); or those prepared or produced in a traditional manner: traditional speciality guaranteed (TSG). The EU's or-

ganic farming logo can be put on all pre-packaged organic food products produced in the EU and guarantees that the EU's organic production standards have been met. At the end of 2012, there were 1 138 products registered as PDO, PGI or TSG.

» Promoting animal health and reducing animal disease

The EU Animal Health Law is based on the principle that prevention is better than cure. When animal disease outbreaks do occur, contingency plans exist to contain their spread, protect animals at risk and limit the impact of crises on farmers, the economy and society. Each year, the EU provides financial support to prevent, control and monitor various animal diseases. This includes vaccination programmes, animal testing, treatment and compensation for culling. Overall, these programmes have successfully contributed to reducing the incidence of several diseases in the EU, including rabies, BSE and salmonellosis.

» A strict system for authorising and marketing genetically modified organisms

Genetically modified organisms (GMOs) are organisms whose genetic characteristics are artificially modified in order to give them a new property. They can, for example, be plants or crops that are resistant to drought, tolerant to herbicides or to certain insects or that have an improved nutritional value. The placing on the market of GMOs in the EU is strictly controlled. GMOs can only be used in the EU if they are authorised beforehand. And they are only authorised once they are deemed safe for humans, animals and the environment. Once authorised, they have to be adequately monitored for any unforeseen effects. GMOs can be authorised for food and feed and/or for cultivation. Applications are managed at EU level according to the procedure set out in the relevant EU legislation. This includes an assessment of the application by EFSA as well as by the national authorities of the EU Member States. The Commission can propose a GMO to be authorised only when there is a favourable risk assessment by EFSA. Member States vote within a regulatory committee on the authorisation decision proposed by the Commission. Once a GMO is authorised at EU level, Members States can, however, adopt safeguard clauses at national level when a serious risk to health or to the environment is identified. Any product containing, consisting of, or produced from authorised GMOs has to be labelled accordingly, except if there is an unavoidable and unintended GMO presence below 0.9 %.

» Meeting standards: regular checks within the EU

Business operators have the primary responsibility for ensuring that the food they place on the market is safe. Strict and regular official controls carried out by the EU Member States' authorities ensure that the EU's high standards for food and feed are met and maintained. Official controls are about the enforcement of the rules. Controls are carried out regularly on all the operators along the agro-food chain by independent, impartial, well-trained authorities. They must use state-of-the-art techniques and methods, and they rely on a wide network of official laboratories for any test or analysis needed to verify compliance with the rules. The EU inspectors of the European Commission's Food and Veterinary Office (FVO) audit national authorities and check that EU rules are complied with across the EU. They are also active in countries preparing to join the EU and countries exporting animals, plants, food and feed to the EU.

» Official controls at EU borders

The EU's border controls on plants, animals, food and feed imports are essential to safeguard animal, plant and public health and to ensure that all imports meet EU standards and can be placed on the EU market safely. Border controls are tailored to different products and commodities and to the hazard they might carry for health.

» Reducing food waste

Over 100 million tonnes of food are wasted every year in Europe — agricultural food losses and fish discards are not included in these estimates. It occurs at all the levels of the food chain: in primary production, food manufacturing, retail/wholesale, food services (catering), and at consumer level. This has environmental, economic and social impacts. The EU intends to halve the level of edible food waste by 2030 as part of its resource efficiency strategy (EU Parliament, 2017). One of the short-term initiatives is to increase consumer-awareness of food waste.

4.4 PRACTICAL SUGGESTIONS TO GUARANTEE FOOD SAFETY

Area	Requirements
Training	• You must be trained in safe food handling practices. Many options are available and training does not need to be a formal course. For example, completion of all "I'M ALERT" modules fulfils this requirement. "I'M ALERT" is a free online training package available at: www.imalert.com.au • Repeat training every three years
Personal hygiene	• Good hand hygiene is essential to prevent food-borne illness • Wash your hands: – before starting food preparation – after going to the toilet – after blowing your nose – after changing nappies – after touching raw meat, etc. • Cover wounds with a water-proof dressing • Do not handle if you have symptoms of diarrhea, vomiting, fever, sore throat with a fever, or jaundice. These symptoms mean you may be suffering from an illness that can be passed on to others

Product choice	• Check "use-by" dates and the conditions of packaging before purchasing any foods **Note: there is an important difference between a "use-by" and "best-before" date. A product may not be safe to eat when past the "use-by" date. A "best-before" date indicates when the food reduces in quality only, but will most likely remain safe to eat** • Do not use food from damaged packaging • Do not use raw milk from cows or goats as it is not safe for children • Home grown vegetables are great for kids – just brush off visible dirt and wash in running water • Home produced eggs are also fine – just wipe off visible dirt with a clean cloth and cook thoroughly. avoid eggs that are cracked on very dirty
Storage	• Keep FDC foods separate from home-use foods as FDC foods must comply with food laws. Use separate cupboards, refrigerator shelves or marked containers to avoid any mix ups Chilled food • Keep cold foods below 5°C. The easiest way to do this is to keep a thermometer in your fridge and check the temperature often. You do not need to write it down • Follow storage and shelf life instructions on the label • Home-made meals can be kept in the fridge for two to three days • The smell and look of food is not a good guide of safety. bacteria that can cause illness do not always visibly spoil the food or make it smell "off" • Keep raw meats where they cannot drip juices on to ready-to-eat food. Keep them on the bottom shelf of the fridge or in a separate compartment or sealed container Frozen food • Keep frozen food and do not freeze once thawed • Follow the manufacturer's instructions on shelf life, thawing and cooking

Area	Requirements
Preparation	• Do not touch ready-to-eat foods with your bare hands. Use gloves, tongs or similar • Wash fruits and vegetables in running water before cutting and serving • Prepare raw meat in a way that it cannot contaminate other foods. Use separate chopping boards and utensils for meats and other foods • Cover foods prepared in advance with cling wrap or keep them in lidded containers • Do not use any foods that are past their "use-by" date • Defrost foods in the refrigerator, under running cold water or in the microwave. If you use a microwave, cook the food straight away
Cooking meals	• Heat meals cooked from scratch to above 75˚C • A probe thermometer should be used to check food temperatures • Always place the probe into the centre of the food and wait until the reading stabilizes
Cooling	• If you prepare meals in advance, it is important to cool foods to below 5˚C as quickly as possible • As soon as the food stops steaming, it should go into the fridge • Speed up cooling by putting the food into smaller containers, standing the container in cold water or move it to a cooler place • Label the meal container with the date of cooking
Reheating	• Reheat meals until steaming hot throughout • There is no specified temperature for reheating • If using a microwave, use a microwave-safe container
Service	• Use tongs or wear gloves to handle and serve ready-to-eat food • Do not allow perishable food to be out of the refrigerator for more than four hours

Area	Requirements
Cleaning and sanitizing	• Keep the kitchen clean • Benches should be cleaned with hot, soapy water and left to dry • Food contact surfaces such as cutlery, cutting boards, plates and cups must be sanitized at the end of the day • use separate cups and plates for each child • The easiest way to sanitize utensils and cutting boards is by using a dishwasher. If your dishwasher has a sanitizing cycle, use it when washing FDC equipment • Food grade chemical sanitizers may also be used
Premises	• Keep premises free of pests and ensure the kitchen in pest proof with fly screening or tight fitting doors and windows kept closed during food preparation • Keep pets out of the kitchen
Infant mils	• Pre-made infant mils must be placed in the refrigerator immediately on arrival and should be labelled with the child's name and date of mixing / expressing • Require parents to provide sterilized bottles and teats **Mixing infant formula** • Wash your hands before mixing infant formula • Use fresh water for each batch and bring to a rolling boil, or when using an electric kettle boil until the cut-off point • Allow the water to cool, then measure out the water and put in bottle • Add the formula in the correct amount, following the guidance on the tin • Seal bottle and shake to mix the formula • Test temperature on wrist before feeding infant • Discard leftover formula one hour after feeding • Infant formula can be stored in the refrigerator for 24 hours or at room temperature for one hour **Warming prepared formulas / breast milk** • Sit the bottle in warm to hot water until it reaches the right temperature for feeding but no longer than 10 minutes • Do not shake breast milk: roll it to ensure an even temperature • Microwaving is not recommended as they do not heat evenly and may create "hot spots" which can burn the infant's mouth • Do not microwave breast milks as it destroys its immunological properties

Excursions	· If you take the children out for an excursion, be mindful of the length of time the food will be out of temperature control. it is best to use ice blocks in a cooler bag or an ice cooler to keep foods cool to prevent the growth of bacteria.

4.5 GOOD FOOD HYGIENE

Good food hygiene is essential for school canteens' to make food that is safe to eat. So, even though there might not be a specific legal requirement behind each tip in this section, it is still very important for the school canteen' staff to understand what good food hygiene is and to follow this advice. Good food hygiene helps to:

- obey the law
- reduce the risk of food poisoning among customers (children)
- protect the business's reputation

The four main things to remember for good hygiene are:

- cross-contamination
- cleaning
- chilling
- cooking

These are known as the 4 Cs: they will help school canteen' staff to prevent the most common food safety problems.

Cross-contamination

Cross-contamination is when bacteria are spread between food, surfaces or equipment. It is most likely to happen when raw food touches (or drips onto) ready-to-eat food, equipment or surfaces. Cross-contamination is one of the most common causes of food poisoning.

Do the following things to avoid it:

- clean and disinfect work surfaces, chopping boards and equipment thoroughly before you start preparing food and after you have used them to prepare raw food;
- use different equipment (including chopping boards and knives) for raw meat/poultry and ready-to-eat food unless they can be heat disinfected in, for example, a commercial dishwasher;

- wash your hands before preparing food;
- wash your hands thoroughly after touching raw food;
- keep raw and ready-to-eat food apart at all times, including packaging material for ready-to-eat food;
- store raw food below ready-to-eat food in the fridge. If possible, use separate fridges for raw and ready-to-eat food;
- provide separate working areas, storage facilities, clothing and staff for the handling of ready-to-eat food;
- use separate machinery and equipment, such as vacuum packing machines, slicers and mincers, for raw and ready-to-eat food;
- separate cleaning materials, including cloths, sponges and mops, should be used in areas where ready-to-eat foods are stored, handled and prepared;
- make sure that your staff know how to avoid cross-contamination.

Cleaning

Effective cleaning gets rid of bacteria on hands, equipment and surfaces. So it helps to stop harmful bacteria from spreading onto food. You should do the following things:

- make sure that all your staff wash and dry their hands thoroughly before handling food;
- clean and disinfect food areas and equipment between different tasks, especially after handling raw food;
- clear and clean as you go. Clear away used equipment, spilt food etc. as you work and clean work surfaces thoroughly;
- use cleaning and disinfection products that are suitable for the job, and follow the manufacturer's instructions;
- do not let food waste build up.

Chilling

Chilling food properly helps to stop harmful bacteria from growing. Some food needs to be kept chilled to keep it safe, for example food with a 'use by' date, cooked dishes and other ready-to-eat food such as prepared salads and desserts. It is very important not to leave these types of food standing around at room temperature. So, make sure you do the following things:

- check chilled food on delivery to make sure it is cold enough;
- put food that needs to be kept chilled in the fridge straight away;
- cool cooked food as quickly as possible and then put it in the fridge;
- keep chilled food out of the fridge for the shortest time possible during preparation;
- check regularly that your fridge and display units are cold enough.

Cooking

Thorough cooking kills harmful bacteria in food. So it is extremely important to make sure that food is cooked properly. When cooking or reheating food, always check that it is steaming hot all the way through. It is especially important to make sure that you thoroughly cook poultry, pork, rolled joints and products made from minced meat, such as burgers and sausages. This is because there could

be bacteria in the middle of these types of products. They should not be served pink or rare and should be steaming hot all the way through. Whole cuts of beef and lamb, such as steaks, cutlets and whole joints, can be served pink/rare as long as they are fully sealed on the outside.

4.6 HEALTH-FRIENDLY AND HEALTH-UNFRIENDLY FOOD PREPARATION METHODS, THEIR IMPORTANCE

A health food service:

- makes it easy for students to choose healthy snacks and meals
- offers a variety of nutritious foods
- promotes foods that are consistent with the Dietary Guidelines for Children and Adolescents
- can be an avenue for consistent and continual health education
- complements the diverse elements of the school curriculum
- involves students, parents and the wider school community
- is an integral part of the entire healthy school environment
- is even more accepted when it is friendly

HERE SOME SUGGESTIONS ABOUT THE LAST POINT

Cooking should always preserve the nutritional value of food and assure the products' healthiness

On the other hand, cooking can also have negative effects:

Cooking has healthy purposes for food such as:

- hygienical: high heat and maintained for some time destroys pathogenic microorganisms and certain toxic substances present in food.
- sensorial: it increases the attractiveness of food.
- nutritional: it increases the bioavailability of some nutrients and facilitates food digestibility.
- technological: inactivate the enzymes responsible for food perishability, thus increasing the possibility of preservation.

- decrease in nutritional value (losses of amino acids, thermolabile vitamins and mineral

salts by dissolution);

- losses of water-soluble vitamins during boiling, among which the most studied for its high reactivity and solubility in water was vitamin C, often used as an index of changes during heat treatment; whereas, for fat-soluble vitamins the greatest loss occurs with food frying. The most thermostable vitamins at cooking are vitamin D and K, niacin, biotin, riboflavin, pyridoxine; the thermostable ones that are rapidly destroyed by heat are vitamins A and C, folic acid, thiamine, pantothenic acid.

The amount of water used has a directly proportional effect on the loss of water-soluble vitamins. A very interesting alternative is steaming, which can be achieved with baskets in traditional pots or steam ovens that allow several hobs to be cooked at the same time. The lower is the loss of water-soluble substances the better is the organoleptic quality of the product.

Optimal examples of cooking and how to prepare food at home:

- pasta or rice: preferably use light seasonings such as tomato sauces, lean meat sauce, season vegetable sauce with the addition of raw oil at the end of cooking, fresh vegetable broth, degreased meat broth;
- eggs: prefer those of category "a" ("fresh eggs") and with egg code 0 (organic egg production) or egg code 1 (free-range egg); cooking can be: firm, scrambled in non-stick baking tray or in the oven;
- milk derivatives: use of cheese such as: mozzarella, fresh caciotta cheese, cow ricotta cheese, sheep ricotta cheese, soft cheese, parmigiana cheese, scamorza cheese;
- cured meats: raw ham without preservatives (possibly low-fat or cutting visible fat), speck and bresaola. limit consumption of cured meats, mortadella, sausages and wurstel);
- meat: use lean meat of adult cattle, chicken breast and turkey, lean rabbit meat, lean pork meat. cooking modes: boiled in a pressure cooker, steamed, on steak, baked in the oven using milk and/or lemon juice, stewed with the addition of oil at the end of cooking (never salt the meat before cooking);
- seafood: oily fish, fillets of trout, fillets of sole, toad tail, cod or hake, palombo, turbot, sea bream. Cooking modes: boiled or steamed, seasoned with raw oil and parsley, baked in the oven with milk or lemon juice and/or with raw extra virgin olive oil at the end of cooking, baked in a pan with a non-stick bottom with breadcrumbs and lemon juice. frozen fish should be thawed slowly in the refrigerator and used quickly;
- legumes: beans, peas, chickpeas, lentils, broad beans, soybeans. Cooking modes: to increase the digestibility of legumes, put them in cold water for 12 hours, changing the water often. Then boil them with various vegetables (carrots, onions, celery), or use them with cereals (barrel, barley, rice, etc.) as a single dish.
- vegetables: vegetables must be varied by giving preference to seasonal vegetables, avoiding first fruits. Cooking modes: steamed, pressure cooking or raw. Seasonal vegetables can be used as a condiment for first courses. Remember that potatoes are not vegetables, but instead replace bread or pasta.
- fruit: use fresh seasonal fruit, avoiding first fruits;

- olive oil: it is advisable to use extra virgin olive oil to be added raw at the end of cooking, respecting the recommended weights, in order to optimize the control of the weight of the child;
- salt: do not over-salt food, preferably use iodized salt, do not season with flavor enhancers based on monosodium glutamate;
- flavouring agents: avoid the use of roasting preparations, possibly use aromatic herbs (oregano, marjoram, rosemary, thyme, parsley, basil, sage, fennel seeds etc.) and spices (pepper, chili pepper, nutmeg, saffron, curry, etc.).

4.7 HOW TO MAKE COMBINATIONS ATTRACTIVE

In an article recently published in an American pediatric medicine magazine (Jama[22]) about a study carried out at the Harvard Medical School, it has been demonstrated that making food more attractive can ensure that even the less liked dishes are appreciated by children, even the more sketchy. One of the biggest problems faced by mothers is the rejection of fruit and vegetables: despite the fact that it is colourful and beautifully coloured, children refuse it. Yet it's not impossible to make children love vegetables, just make them more stimulating to the eye, using imagination and creativity in the kitchen, not only to develop delicious vegetarian recipes, but also to care for the aesthetics of dishes.

How? For example, taking inspiration from cartoons and from the illustrations of their favourite books. Colours and rounded funny shapes, reminiscent of animals, cottages, everyday objects that the little ones recognize, must dominate. For example, it could be fun to try to build a vegetable boat: use a nice fleshy and sweet pepper, yellow or red, cut lengthwise and empty it of white seeds and filaments, insert centrally a stick that piers it, putting at the ends a cheese cube. Then prepare a delicious filling for the boat's base, for example, a tuna or ricotta mousse with mashed potatoes or peas, or a fresh salad made with many cubes of vegetables, corn and carrots. Cut cheese into thin slices and make a cheese sail that can be anchored to the ship's stick with a straw, here is a playful and appetizing side dish.

To make any side dish of vegetables tasty and irresistible, therefore, it is desirable to compose simple dishes, with a few ingredients in different and cheerful colours, to be cut out in such a way that they take on sympathetic shapes. For example: a clown face made with bread, vegetables and cheese, or many small animals made from small cubes of vegetables (even cooked, for example baked in the oven), are simple ideas to make the moment of the meal really exciting.

22 https://jamanetwork.com/journals/jamapediatrics

4.8 KID'S HEALTHY EATING PLATE

The Kid's Healthy Eating Plate (Harvard T.H. Chan) is a visual guide to help educate and encourage children to eat well and keep moving. At a glance, the graphic features examples of best-choice foods to inspire the selection of healthy meals and snacks, and it emphasize physical activity as part of the equation for staying healthy.

The Kid's Healthy Eating Plate was created by nutrition experts at the Harvard T.H. Chan School of Public Health, based on the best available science, to enhance the visual guidance provided by the U.S. Department of Agriculture's MyPlate icon. The Kid's Plate reflects the same important messages as the Healthy Eating Plate, with a primary focus on diet quality, but is designed to further facilitate the teaching of healthy eating behaviours to children.

4.9 BUILDING A HEALTHY AND BALANCED DIET

Eating a variety of foods keeps our meals interesting and flavourful. It's also the key to a healthy and balanced diet because each food has a unique mix of nutrients—both macronutrients (carbohydrate, protein, and fat) and micronutrients (vitamins and minerals). The Kid's Healthy Eating Plate provides a blueprint to help us make the best eating choices. Along with filling half of our plate with colorful vegetables and fruits (and choosing them as snacks), split the other half between whole grains and healthy protein:

- The more veggies and the greater the variety, the better it is;
- Potatoes and French fries do not count as vegetables because of their negative impact on

blood sugar;

- Eat plenty of fruits of all colors;
- Choose whole fruits or sliced fruits (rather than fruit juices; limit fruit juice to one small glass per day);
- Go for whole grains or foods made with minimally processed whole grains. The less processed the grains, the better. Whole grain, whole wheat, brown rice, quinoa, and foods made with them, such as whole-grain pasta and 100% whole-wheat bread, have a gentler effect on blood sugar and insulin than white rice, bread, pizza crust, pasta, and other refined grains. Choose beans and peas, nuts, seeds, and other plant-based healthy protein options, as well as fish, eggs, and poultry. Limit red meat (beef, pork, lamb) and avoid processed meats (bacon, deli meats, hot dogs, sausages). It's also important to remember that fat is a necessary part of our diet, and what matters most is the type of fat we eat. We should regularly choose foods with healthy unsaturated fats (such as fish, nuts, seeds, and healthy oils from plants), limit foods high in saturated fat (especially red meat). Use healthy oils from plants like extra virgin olive, canola, corn, sunflower, and peanut oil in cooking, on salads and vegetables, and at the table. Limit butter to occasional use.

Dairy foods are needed in smaller amounts than other foods on our plate:

- Choose unflavored milk, plain yogurt, small amounts of cheese, and other unsweetened dairy foods;
- Milk and other dairy products are a convenient source of calcium and vitamin D, but the optimal intake of dairy products has yet to be determined and the research is still developing. For children consuming little or no milk, ask a doctor about possible calcium and vitamin D supplementation;
- Water should be the drink of choice with every meal and snack, as well as when we are active: water is the best choice for quenching our thirst. It's also sugar-free, and as easy to find as the nearest tap;
- Limit juice—which can have as much sugar as soda—to one small glass per day, and avoid sugary drinks like sodas, fruit drinks, and sports drinks, which provide a lot of calories and virtually no other nutrients. Over time, drinking sugary drinks can lead to weight gain and increase the risk of type 2 diabetes, heart disease, and other problems.

Overall, the main message is to focus on diet quality. The type of carbohydrate in the diet is more important than the amount of carbohydrate in the diet, because some sources of carbohydrate—like vegetables (other than potatoes), fruits, whole grains, and beans—are much healthier than sugar, potatoes, and foods made from white flour. The Kid's Healthy Eating Plate does not include sugary drinks, sweets, and other junk foods. These are not everyday foods and should be eaten only rarely, if ever. The Kid's Healthy Eating Plate encourages the use of healthy oils in place of other types of fat.

4.10 THE ASPECT OF AUTONOMY OF CHILDREN AT LUNCH

An autonomous child is not only the result of the generic good education provided by its parents, but of educational strategies built over time. Ever since he is a child, his parents often think that he needs everything and for this reason they intervene continuously, replacing him in any situation that could lead to the experience of autonomy. The actions focused on the autonomy of the child in the home are the first step to generate active and autonomous minds.

When we talk about the concept of autonomy of children, we cannot fail to cite the Montessori Method, which provides some ideas for a convivial lunch in complete freedom. The Montessori Method is an educational system developed by Maria Montessori, an educator, philosopher, doctor, child neuropsychiatrist and Italian scientist, internationally known for the educational method that takes its name. This method is practiced in about 20,000 schools around the world, serving children from birth to eighteen years of age. Montessori pedagogy is based on independence, freedom to choose one's own educational path (within codified limits) and respect for the child's natural physical, psychological and social development. According to pedagogues, in order to pursue autonomy of children, parents must show them (do not teach, but demonstrate by example and imitation) that they can take care of themselves and do it well, learning to eat, spare and set up, clean the table, pour water and even cut off food autonomously.

Examples of strategies and activities promoted by the Montessori and Waldorf pedagogy methods:

In homes where children are, environment should be child-friendly: a low table (suggested wooden, as the kid should have possibility to touch, to feel and to enjoy the material) with suitable chairs, where children can eat comfortably and without climbing, can serve their companions and learn autonomy. A compromise can be found in the house: a low table can be used for snacks or breakfast and the child will have a chair high and easy to use, to stay at the table with the family. To make it easy to reach the autonomy of the children also through the meal with forks and knives suitable for their age and easy to grasp, dishes and glasses to handle with care, chairs or high chairs that allow them to stay at the same height of the table and at the same time to descend independently.

Children are extraordinary: from early age they are able to cook, knead, cut, squeeze; some cooking activities can easily be entrusted to children: squeeze oranges and lemons; cut bananas with a little sharpened knife; spread the jam on the bread; knead the pizza and season it; knead the biscuits and decorate them; weigh the ingredients of a cake and mix them. It is important to involve children in the kitchen because in this way they become familiar with food, with its consistency, its origin, its perfumes, and its taste. They will be less wary of trying vegetables or fruit, if they have cut or cooked them on their own. Involve the child in setting up, clear the table, and organize the tableware.

It is suggested to use crockery made of glass and ceramics, because they are materials that contain the error: a glass thrown on the ground breaks up. The child learns by himself that the fragile object must be handled with care. Children are thrilled to clean the house: mop the floor, remove dust, brush, wash dishes and load the dishwasher and washing machine. It's important to seize this opportunity, encourage them and ensure that they do not stop! They should be asked to help their parents to clear and clean the table; it is a good way to make them aware of how much they dirty.

If they throw the food on the ground and then they have to clean it, Montessori method suggests: they experience in an automatic way, through the experience of error, that food on the floor soils and it is boring to take away from it! It is always important to remember that monotony plays an important role: many children do not eat because there are always the same things on the table. There should be enough variety of ingredients and preparations; children should be involved in shopping and encouraged to choose a vegetable to taste, choosing it by colour, scent, texture and beauty. On the contrary, some people want to eat just the same things. It's up to parents to match that particular favourite food with something that is different every day.

It is important that all commensals have the same food, without too many distinctions: This is the secret to avoid children's selectivity towards food. Serve first the vegetables, then the rest. This is the best way to make them eat vegetables: when they are hungry. Finally, we have to accept the fact that each child still has its own tastes: they do not really like some foods, but there are many others to try!

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