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Teacher Training Module: Science Learning Cycle Two

Food and Health

Sindh Technical Assistance –
Development through
Enhanced Education Programme
(STA-DEEP)



THE AGA KHAN UNIVERSITY

Introduction and Rationale of the Training

Dear Teachers!

Welcome to the new phase of the Continuous Professional Development (CPD) Program. In the previous phase, we had focused on pedagogical skills that helped you to develop your skills to make classroom more interactive, participative, and joyful for our students. In the new phase, we will continue practicing those pedagogical skills and also learn about the introduced content knowledge and skills in Mathematics, Science, English, Urdu, and Sindhi. As a result, you will be better prepared to deal classroom situation using modern teaching strategies integrated with subject knowledge.

Our vision

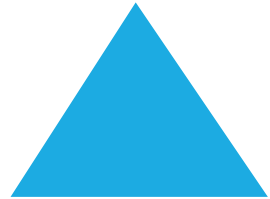
Our common goal is to improve the quality of teaching in schools all over Sindh. We want students to become active and collaborative learners, problem solvers, and critical thinkers who approach tasks with creativity and confidence. They are conceptually clear about the subject content and have the skills to link this content with the world around them. To make this possible, we, as teachers, must be better prepared for the classroom demands in pedagogy and the subject content. Moreover, we aim to professionalize these trainings so that the CPD teacher training courses make an impact and substantially change student performance.

Our Teaching Philosophy

The CPD training sessions, including this training, follow a participatory teaching philosophy that engages participants to apply and practice active and collaborative learning, as well as engage in self and peer reflection to become community of practice. The objective is not only to improve the teaching practices but to help you understand the theory of the subject content and the strategies that help students apply the content in daily life with confidence and mastery.

Supporting You

The training module is designed to support you in your classroom teaching. It will introduce you to the subject content and some approaches for use in the classroom. This will make your teaching more manageable and help you grow as a skillful teacher.

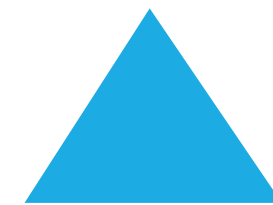


Acknowledgement

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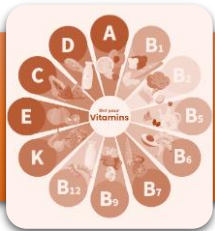
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Food and Health

Learning Objectives: By the end of the session, the teachers will be able to:



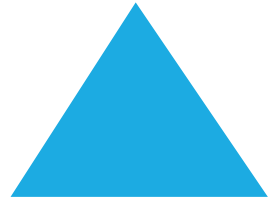
Model active learning strategies while Identifying and classifying food according to its core nutrients



Design learning tasks for suggesting balanced diet and along with justification.



Recognize the significance of balanced diet and design learning task to correlate diet with fitness



Session Plan

Instructional strategies/activities







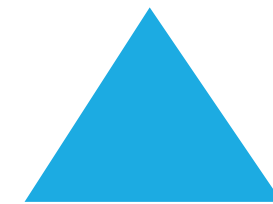
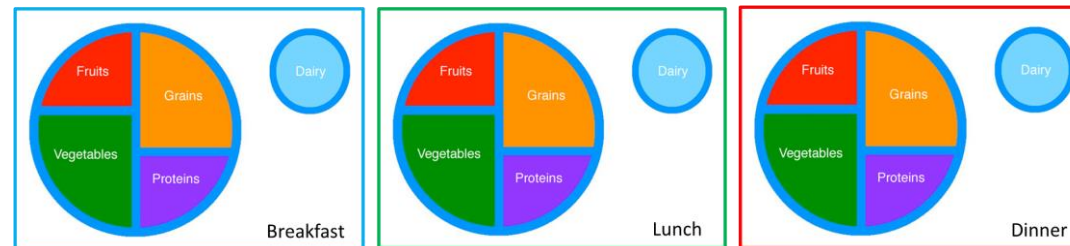
Time	Objective/purpose of the activity	Activities/learning experiences	Materials/resources																				
 <p>10 mins</p>	<p>Welcome</p> <p>Facilitator will welcome the teachers and encourage teachers to share their most memorable learning moment from the previous cycle.</p> 	<ol style="list-style-type: none"> 1. Start the session by asking teachers to look at the Figure 1 below and share their most memorable learning moment experience of previous learning cycle by writing on the sticky note. <div data-bbox="898 703 1617 978" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>The four levels of inquiry and the information given to the student in each one.</p> <table border="1"> <thead> <tr> <th>Inquiry Level</th> <th>Question</th> <th>Procedure</th> <th>Solution</th> </tr> </thead> <tbody> <tr> <td>1—Confirmation Inquiry <i>Students confirm a principle through an activity when the results are known in advance.</i></td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> </tr> <tr> <td>2—Structured Inquiry <i>Students investigate a teacher-presented question through a prescribed procedure.</i></td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td>3—Guided Inquiry <i>Students investigate a teacher-presented question using student designed/selected procedures.</i></td> <td style="text-align: center;">✓</td> <td></td> <td></td> </tr> <tr> <td>4—Open Inquiry <i>Students investigate questions that are student formulated through student designed/selected procedures.</i></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> </div> <ol style="list-style-type: none"> 2. Briefly explain the objectives of the session. 	Inquiry Level	Question	Procedure	Solution	1—Confirmation Inquiry <i>Students confirm a principle through an activity when the results are known in advance.</i>	✓	✓	✓	2—Structured Inquiry <i>Students investigate a teacher-presented question through a prescribed procedure.</i>	✓	✓		3—Guided Inquiry <i>Students investigate a teacher-presented question using student designed/selected procedures.</i>	✓			4—Open Inquiry <i>Students investigate questions that are student formulated through student designed/selected procedures.</i>				<p>Sticky notes/paper chits</p> 
Inquiry Level	Question	Procedure	Solution																				
1—Confirmation Inquiry <i>Students confirm a principle through an activity when the results are known in advance.</i>	✓	✓	✓																				
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Figure 1. The four levels of inquiry



 <p>20 mins</p>	<p>Warm-up Activity To motivate the teachers for the concept under discussion.</p>	<ol style="list-style-type: none"> Write the following (given in the point below) on board/flip chart. Ask the teachers to think “What does food mean to you?” * And next to each word below, write the first food that comes to your mind. <div data-bbox="1041 434 1518 721" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 50%;">health _____</td> <td style="width: 50%;">illness _____</td> </tr> <tr> <td>party _____</td> <td>expensive _____</td> </tr> <tr> <td>yuck _____</td> <td>cheap _____</td> </tr> <tr> <td>home _____</td> <td>cool _____</td> </tr> <tr> <td>love _____</td> <td>diet _____</td> </tr> <tr> <td>friendship _____</td> <td>baby _____</td> </tr> <tr> <td>munchies _____</td> <td>child _____</td> </tr> <tr> <td>memories _____</td> <td>teenager _____</td> </tr> <tr> <td>holiday _____</td> <td>dad _____</td> </tr> </tbody> </table> </div> <ol style="list-style-type: none"> Invite teachers to share their answers with other teachers. [e.g., “Health” may remind of “mixed nuts”] 	health _____	illness _____	party _____	expensive _____	yuck _____	cheap _____	home _____	cool _____	love _____	diet _____	friendship _____	baby _____	munchies _____	child _____	memories _____	teenager _____	holiday _____	dad _____	<p>Board, chalks, white papers, flip charts.</p>
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yuck _____	cheap _____																				
home _____	cool _____																				
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munchies _____	child _____																				
memories _____	teenager _____																				
holiday _____	dad _____																				
 <p>40 mins</p>	<p>Input Jigsaw activity on the concept of Food and Health</p> 	<ol style="list-style-type: none"> Write the word food and health on the board Brainstorm and collect the responses of teachers. <div data-bbox="828 1013 1086 1173" style="border: 1px solid black; border-radius: 50%; width: 100px; height: 100px; display: flex; align-items: center; justify-content: center; margin: 10px auto;"> <p>Food and Health</p> </div>	<p>Handouts, white papers, markers, Blackboard, chalk, charts of pyramid and hygiene, STBB Science –IV.</p>																		

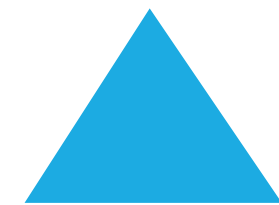




3. Divide the whole class into four groups and distribute the handout # 01 among the teachers for jigsaw reading.
 - a. Group # 01 Carbohydrate.
 - b. Group # 02 Proteins.
 - c. Group # 03 Vitamins.
 - d. Group # 04 Oils and Minerals
4. After each group reads their assigned jigsaw, ask them to offer suitable food items from their assigned group to create a balanced diet plate for a 12–13-year-old for a day:



5. Ask few follows up questions;
 - a. If a person intake a large quantity of foods like grains (flour, wheat, maize, rice, corn and foods made from them like chapatti, bread and paratha), sweet foods (sugarcane, cookies, and sweet meat) as part of daily diet what changes are likely to occur in that person's body?

		<p>b. Nasir uses sufficient seasonal fruits and vegetables then what changes will he observe in his body?</p> <p>6. Explain the terms hygiene, health and pyramid of food. (See handout-1 and 2 and Science Book IV p# 30-44)</p>	
 <p>60 mins</p> <p>(30 min for group work, 20 min for presentation and 10 mints for feedback from each group)</p>	<p>Practice</p> <p>Teachers will observe, think critically and develop activities for their classroom.</p> 	<p>1. Divide the whole class into four groups, assign them different activities.</p> <ol style="list-style-type: none"> Group # 01. Select the foods from given chart and place them (carbohydrates, proteins, vitamins, fats, minerals) in a food pyramid to depict their amount. Group # 02. Develop a daily diet plan for yourself from the foods available at your region/local market and give reasons why each type of food was chosen. Group # 03. Develop the comparative chart on healthy and unhealthy lifestyles from given materials. (Handout 01, 02,03, Flash cards of various foods and habits and textbook – IV P# 40-44) Group # 04. Develop a classroom activity on creating healthy eating and hygiene habits (Handout # 03 and STBB Science – IV) 	<p>Handout # 02 and 03. Charts of different foods. Science Book –IV. White papers, flip charts.</p>

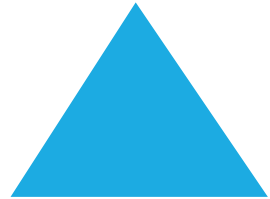


		<ol style="list-style-type: none"> Invite each group to share their work with class. Conclude activity with key points. 	
 <p>30 mins</p>	<p>Reflection for Action This will support the Teachers to apply their experience of the workshop and create a plan for their classrooms (Individual task).</p>	<ol style="list-style-type: none"> Guide teachers to reflect forward and plan for their classroom implementation: <ol style="list-style-type: none"> What did you learn from this session? How will you take this learning into your class? Each teacher will make their quick plan by identifying <div style="background-color: #0099cc; color: white; padding: 10px; border: 1px solid black; margin: 10px 0;"> <ol style="list-style-type: none"> Level of Inquiry: _____ Plan <p>Grade level: _____</p> <p>Topic: _____</p> <p>SLO: _____</p> <p>Inquiry Question: _____</p> <p>Procedure: _____</p> <p>Probable Solution: _____</p> </div> Ask few volunteers to share their work. 	A4 papers
 <p>10 mins</p>	<p>Consolidation To reflect on their learning and recap the key takeaways from the workshop.</p>	<ol style="list-style-type: none"> Take responses from teachers about this cycle: <ul style="list-style-type: none"> What did you learn from this session? What are some of the strategies that will encourage your students to adopt <i>healthy lifestyle</i>? 	

Handout 1

Classification of Food

- 1. Carbohydrates:** Carbohydrates are the most important part of our food consisting of sugar and starchy materials like food grains (wheat, rice, barely, potatoes, honey, sugar cane, etc). After digestion they are included in the blood in the form of glucose. The glucose reaches to each and every part of body where it is oxidised to produce heat energy which is necessary for the vital life functions of our body. Carbohydrate provides energy to human beings about 4 calories per gram.
- 2. Proteins:** Proteins are used for building and repairing muscles, red blood cells, hair and other tissues, and for making hormones. Adequate protein intake is also important for a healthy immune system. Because protein is a source of calories (4 kcal per gram), it will be used for energy if not enough carbohydrate is available due to skipped meals, heavy exercise, etc. Main sources of protein are animal products like meat, fish, poultry, milk, cheese and eggs and vegetable sources like legumes (beans, lentils, dried peas, nuts) and seeds.
- 3. Fat:** Fat is a good energy food which serves like a reserve part of our food, but a reasonable quantity of fats only can be consumed by us. They are hard to digest and take much time for digestion. Fat maintains skin and hair, cushions vital organs, provides insulation, and is necessary for the production and absorption of certain vitamins and hormones. The chief sources of fats are ghee, milk, edible oil etc. Compared to carbohydrate and protein, each gram of fat provides more than twice the number of calories (9 kcal per gram).
- 4. Vitamins:** Vitamins help to regulate chemical reactions in the body. There are 13 vitamins, including vitamins A, B complex, C, D, E, and K. Because most vitamins cannot be made in the body, we must obtain them through the diet. Many people say that they feel more energetic after consuming vitamins, but vitamins are not a source of energy (calories). Vitamins are best consumed through a varied diet rather than as a supplement because there is little chance of taking too high a dose.
 - Lack of vitamin A results into night blindness.
 - Lack of vitamin B complex results into exhaustion, body pain, muscular aches, loss of appetite etc.



- Lack of vitamin C results into tooth decay and some skin diseases.
- Lack of vitamin D results into deformation of bones.

Different Types of Vitamins

Vitamins	Scientific Name	Source	Functions	Deficiency Disease
Vitamin A	Retinol	Carrot, green vegetables	Healthy Vision, Boost Immune system	Xerophthalmia (Night Blindness)
Vitamin B	B-Complex	Animal and dairy products	DNA Replication, Produce RBCs	Muscle and Body Weakness
Vitamin C	Ascorbic Acid	Citrus fruits, Berries & Tomato	Anti-oxidant, Formation of iron	Scurvy, Anemia
Vitamin D	Calciferol	Fish, Egg yolk & Cheese	Bone Growth	Rickets, Osteoporosis
Vitamin E	Tocopherol	Almond, Peanut & soyabeans	Anti-oxidant, Boost Immune System	Neuropathy, Anemia
Vitamin K	Phylloquinone	Green leafy vegetables	Blood Coagulation	Hemorrhagic diseases

5. Minerals: Minerals are components of foods that are involved in many body functions. For example, calcium and magnesium are important for bone structure, and iron is needed for our red blood cells to transport oxygen. A shortage of minerals can have severe effects on the health like deficiency of iron can cause anaemia; calcium deficiency can lead to brittle bones and rickets. deficiency of magnesium can lead to memory loss, diabetes, painful joints etc. Main source of minerals is; Iron is present in green vegetables, poultry, fish, dried fruit etc., Calcium is present in milk, egg, green vegetables, small fishes etc. Magnesium is present in nuts, almond seeds, fruits etc.

Handout 2

Function of Food





Foods are made up of nutrients. We cannot see nutrients but we can see food items. So, we can understand about diet with the help of food items also. Each food item is made up of several nutrients so it may perform more than one function. Food can be divided into three groups according to their main function:

- Energy giving foods
- Body growing foods
- Protective foods

Energy giving foods: These give us energy. The body needs energy to move, work and learn. Children are growing and are more active so they should eat lots of energy foods to stay healthy. Energy giving foods include: Grains like flour, wheat, maize, rice, corn and foods made from them like chapatti, bread and paratha. Sweet foods like sugarcane, honey and sugar. Roots plants like potato. Fats like butter, ghee and oils.

Body building foods: These work in the body to help us grow and keep us strong and healthy. When you are not well or if you keep getting unwell frequently you should increase intake of these foods. Body building foods include: Meat, chicken fish, eggs, Milk, yogurt, lassi and other products, Lentils, beans, seeds, and nuts. Meat can be expensive, but lentils, beans and milk are affordable good body building foods.

Protective foods: They protect us from common infections like cold and flu as well as chronic diseases like diabetes and high blood pressure. Fruits and vegetables are protective foods. Eating fruits and vegetables of different colours and using seasonal variety is very important for health.

Name of the Nutrient	Sources	Function	
Carbohydrates (energy giving food)	Rice, potato, wheat, sugar	Provides energy	
Fats (energy giving food)	Butter, ghee, milk, cheese	Gives more energy compared to carbohydrates	
Vitamins and minerals (protective food)	Fruits and vegetables	Required for normal growth and development	
Proteins (body building food)	Milk, eggs, meat, fish, soybean	Helps in building and repair of body	

Handout 3

PERSONAL HYGIENE

Hygiene is a series of practices performed to preserve health. According to the World Health Organization (WHO), "Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases.

Personal hygiene refers to maintaining the body's cleanliness. One of the most effective ways we have to protect ourselves and others from illness is good personal hygiene. This means washing your hands, especially, but also your body. It means being careful not to cough or sneeze on others, cleaning things that you touch if you are unwell, putting items such as tissues (that may have germs) into a bin, and using protection (like gloves) when you might be at risk of catching an infection. Personal hygiene, such as bathing, is very much dependent on the culture in which you live. In some cultures, it is expected that you will wash your body at least every day and use deodorants to stop body smells. Other cultures have different expectations.



Additional Resources

<https://unicefaproinasactoolkit.files.wordpress.com/2017/09/canada-grade-6.pdf>

<https://web.colby.edu/feedme/the-food-pyramid/>

<https://www.hsph.harvard.edu/nutritionsource/healthy-eating-pyramid/>

<https://www.bbc.co.uk/bitesize/topics/zf339j6/articles/zmwvqdm>

