

LESSON PLAN

CLASS: X

SUBJECT: Biology

Name of the Teacher:

Name of the School:

Name of the Lesson/Unit	Topic	No. of Periods Required	Time line for teaching		Any specific Information
			From	To	
Nutrition – Food Supplying System	Autotrophic Nutrition	5			Conduct a symposium on the contribution of different scientists in understanding the process of photosynthesis.
	Heterotrophic Nutrition	3			
	Malnutrition & Vitamins	2			Conduct a seminar on malnutrition and deficiency diseases

Prior Concept/ Skills: <i>(Essential concepts and skills to be checked/bridged before teaching the current concept.)</i> Nutrients, Nutrition, Autotrophic, Heterotrophic, Saprophytic, Parasitic, Photosynthesis, Food components, Carbohydrates, portions, fats, vitamins, Digestion, Balanced diet, Deficiency diseases					
Learning Outcomes: <i>(Select from SCERT Academic Calendar and Textbook)</i> - Differentiates autotrophic and heterotrophic nutrition. - Plans and conducts investigations / experiments to verify the need of various factors for photosynthesis and confirms whether photosynthesis happened or not in a plant. - Relates deficiency diseases with malnutrition and vitamin deficiencies. - Explains processes and phenomena, such as nutrition in human beings and plants. - Draws labelled diagrams / flow charts / concept maps of chloroplast, digestive system. - Analyses and interprets data regarding enzymes, vitamins. - Makes hypothesis on consequences, if there is no photosynthesis in our nature. - Applies scientific concepts in daily life such as following good food habits. - Takes initiative to know about scientific discoveries / inventions, such as discovery of oxygen, factors required for photosynthesis. - Exhibits creativity in designing models using eco-friendly resources, such as digestive system.				No. of Periods: 10	

TEACHING LEARNING PROCESS		
Induction/Introduction <i>(Generating interest, informing students about the outcomes and expectations for the lesson)</i> I will give a hand out to my students with the table having the headings - heading “What I know? and What I want to know?” Then I will write the title of the lesson – “Nutrition – The food supply system” on the black board. I will ask the students to write down things they already know about the topic, then a few things they want to know. During this I will facilitate them by providing some key words and leading questions. For example: Nutrients, Nutrition, Autotropic, Photosynthesis, chloroplast, grana, stroma, light reaction, dark reaction, Heterotrophic, Saprophytic, Parasitic, haustoria, Alimentary canal, salivary glands, peristaltic movement, amylase, ptyalin, pepsin, chyme, sphincter, digestion, pancreas, enzymes, villi, bile juice, lipase, fat, liver, emulsification Food components, Carbohydrates, portions, fats, vitamins, Balanced diet, Deficiency diseases.		
Experience and Reflection <i>(Task/question that helps students explore the concept and connect with their life)</i> • What are the sources of food for Us? How they provide food for us? • Visit a nearby PHC and observe the children suffering from malnutrition. Record your feelings and make a note of suggestions to improve their nutritional status. • Consult a gastroenterologist and find out the reasons for indigestion problems.		
Explicit Teaching/Teacher Modelling <i>(I Do)</i>	Group Work (We Do)	Independent Work (You Do)
• Picture illustration of Fig-1, and deriving definition and equation for photosynthesis from the picture. • Discussion on materials essential for photosynthesis. • Discussion on mechanism of photosynthesis using flow chart. • Picture illustration on different types of Heterotrophic nutrition. • Discussion on Human digestion (Activity -4) • Studying the enzymes chart (Activity -5) • Discussion on Malnutrition • Discussion and comprehension on Vitamins chart	• Activity to test the presence of starch in leaves. (Activity – 1) • Mohl’s half leaf experiment. (Activity – 2) • Hydrilla experiment. (Lab Activity) • Black paper experiment. (Activity – 3) • Prepare models of structure of leaf, chloroplast and digestive systems using the available materials. • Group discussion on Food – Hunger – Economic status (Suggested questions for discussion - What will be your feeling, if you don’t get food for 2 days? Think about poor people who are not getting sufficient food every day. How can you help them?)	• Draw the charts showing the internal structure of leaf, chloroplast and digestive system. • Prepare flow charts showing mechanism of photosynthesis, Digestive system. • Answer the questions given in the activity -5

Check For Understanding Questions 1. Factual: ● What is photosynthesis? ● What are the end products of photosynthesis? ● What is the role of acid in stomach? ● What is the reason for Kwashiorkor? 2. Open Ended / Critical Thinking: ● If we keep on increasing CO₂ concentration in air what will be the rate of photosynthesis? ● Why do you think that carbohydrates are not digested in the stomach? ● What suggestions will you give to avoid obesity? Student Practice Questions & Activities (<i>Exercises from workbook / textbooks/ blackboard</i>) ● With the help of chemical equation explain the process of photosynthesis in detail? ● How is the small intestine designed to absorb digested food, explain. ● What is malnutrition explain some nutrition deficiency diseases. ● What process you follow in your laboratory to study presence of starch in leaves?	TLMs (Digital + Print) https://diksha.gov.in/play/content/do_31320682571709644818701 Language lab pen drive resource, DCR https://youtu.be/53yfuRR-Ny4 https://youtu.be/oE174czXrgI https://www.youtube.com/watch?v=OSY4kiV8z3g&list=PLTmqBmlRAx4DboFujvlutez6Lskn93h-3 Pictures of scientists, Charts showing TS of leaf, Structure of chloroplast, Chart showing different types of heterotopic nutrition, Chart showing Digestive glands and enzymes, vitamins chart, Pictures/ specimens/ slides of Yeast, mushroom, Amoeba, Paramecium, Cuscuta, Lice, Leches, tape worm, Human digestive system modal Beakers, water, leaf, methylated spirit, boiling tube, asbestos gauze, tripod stand, bunsen burner, Petridish, iodine solution, Potted plant, wide mouthed bottle, KOH, Test tubes, Funnels, Water, Hydrilla plant, Match box, Black paper with cut design, clips
Assessment (<i>Think of what children SAY, DO and MAKE while learning that can form the evidence of learning to be used for assessment</i>). 1. Write the differences between autotrophic and heterotrophic nutrition. 2. How can you prove that carbon dioxide is essential for photosynthesis? 3. Glossitis: Riboflavin :: Scurvy : ? 4. Explain processes by which light energy is converted in to chemical energy. 5. Draw the diagram of chloroplast and label the parts. 6. Study the table -1 of this lesson and answer the following questions. i) What is the role of lipase in digestion? ii) Where do digestion of proteins start in our body? iii) Which digestive juice contains no enzymes? iv) What are the enzymes secreted by pancreas? 7. What may happen, if there is no photosynthesis in our nature? 8. What food habits will you follow to avoid problems related to digestion?	

SIGNATURE OF THE TEACHER

SIGNATURE OF THE HEAD MASTER

VISITING OFFICER WITH REMARKS