DEPARTMENT OF MEDICAL EDUCATION
COLLEGE OF MEDICINE & DENTISTRY AT THE HILLS
ABBOTTABAD

Problem-Based Learning (PBL) Guidebook

1st & 2nd Year

2025-26

Year
2025-26

Department of Medical Education				
Problem-Based Learning (PBL) Guidebook				
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1.0 Introduction: What is PBL and Why Do We Use It?

What is Problem-Based Learning (PBL)?
PBL is a teaching method where you learn by solving open-ended problems. You will be in a small group with a tutor. The tutor will give you a case (a story about a patient). Your group's job is to figure out the case, step-by-step. You will not be given all the information. You must find it yourselves. This is how real doctors solve problems.

Why is PBL Important for You?

- **Integrates Knowledge:** PBL connects subjects like Anatomy, Physiology, and Biochemistry. You see how they work together in a real patient.
- **Builds Clinical Skills:** You start thinking like a doctor from your first year. You learn to ask the right questions and find answers.
- **Develops Self-Learning:** Medicine changes fast. PBL teaches you how to learn on your own for your whole career.
- **Improves Teamwork:** You learn to work in a team, share ideas, and communicate clearly.

2.0 The PBL Cycle: The Two-Part Process

Each module has one PBL case, split into two sessions:

Part A (PBL1a) - The Inquiry Phase

- **When:** First week of the module.
- **Goal:** To understand the problem and discover what you **need to learn**.
- **Outcome:** A list of **Learning Objectives (LOs)**.

Part B (PBL1b) - The Synthesis Phase

- **When:** Final week of the module.
- **Goal:** To share what you learned and solve the case.
- **Outcome:** A deep understanding of the case, using knowledge from the entire module.

This cycle ensures that your learning throughout the module is focused and relevant.

3.0 The Seven Steps of PBL (Used in both PBL1a and PBL1b)

Your group will follow these seven steps. For PBL1a, you will focus on Steps 1-5. For PBL1b, you will focus on Step 7.

Step	Description	Key Questions to Ask	Example for a Case "The Tired Athlete"
1. Clarify Terms	Find and explain any unknown words or concepts in the case.	"What does this word mean?" "Is this a medical term?"	"What is 'fatigue'? What is 'pallor'?"
2. Define the Problems	List all the problems from the patient's and doctor's perspective.	"What is wrong with the patient?" "What are the symptoms and signs?"	Problems: 1. Fatigue, 2. Pale skin, 3. Shortness of breath on exertion.

3. Brainstorm Ideas	Discuss the case using your current knowledge. Generate ideas and hypotheses.	"What could cause this?" "This might be... because..."	"Could it be anemia? Maybe a heart problem? Perhaps it's due to poor nutrition?"
4. Analyze & Discuss	Organize and critique the ideas from brainstorming. Identify what you know and what you don't know.	"Which idea is most likely? Why?" "What evidence supports this?" "What is missing?"	"Anemia fits with the pallor and fatigue. But we need to know what type of anemia."
5. Formulate Learning Objectives (LOs)	Create a list of specific questions you need to answer to solve the case.	"What do we need to learn about...?"	1. What is iron-deficiency anemia? 2. What is the role of iron in the body? 3. What foods are rich in iron?
6. Self-Directed Learning (SDL)	***(Between Sessions)*** Everyone independently researches the Learning Objectives.	N/A	You read textbooks, watch videos, and use the library to answer the LOs.
7. Report & Synthesize	***(In PBL1b)*** Share your research findings and apply them to fully explain the case.	"Based on what we learned, what is the diagnosis?" "How does it all fit together?"	"The patient has iron-deficiency anemia. This is because... The management would be..."

4.0 Roles and Responsibilities

Table 4.1: Your Role as a Student

Your Duty	What It Looks Like in Practice	What to Avoid
Be Prepared	Read the case before the session. Complete your SDL research thoroughly.	Coming to the session without having read the case or done your research.
Participate Actively	Speak up, share your ideas, listen to others, and write on the whiteboard.	Being silent, using your phone, or having side conversations.
Be Respectful	Listen when others are speaking. Respect different opinions. Build on others' ideas.	Interrupting, dismissing others' ideas, or being rude.
Be a Team Player	Share the workload. Help the group stay on track. Support your peers.	Dominating the discussion or not contributing to the group work.

Table 4.2: The Tutor's Role

Tutor's Duty	What It Looks Like in Practice	What They Will Not Do

Facilitate the Process	Guide you through the 7 steps. Ensure the group is working well together.	Give you the answers or lecture on the topic.
Ask Probing Questions	Ask "why?" and "how?" to make you think deeper. Challenge your assumptions.	Tell you if your answer is right or wrong immediately.
Provide a Safe Environment	Make sure everyone feels comfortable to participate and make mistakes.	Allow anyone to be disrespectful or dominate the session.
Give Feedback	Provide feedback on your group's process and your individual performance.	Take over the discussion or do the work for you.

5.0 PBL Cases for Year 1 & 2 Curriculum

The following table shows the specific PBL cases you will encounter, aligned with your modules.

Table 5.1: Year 1 PBL Case Distribution

Block	Module	PBL Case Title	Focus of PBL1a (Inquiry)	Focus of PBL1b (Synthesis)
A	Foundation-I	**The Fainting Fresher**	A student faints. Explore: What is homeostasis? What is shock? What vital signs are important?	Synthesize how nutrition, hydration, and stress affect the body's basic functions.
A	Blood-I	**The Pale Athlete**	A tired, pale athlete. Explore: What is blood made of? What is anemia? What does iron do?	Diagnose iron-deficiency anemia. Explain the blood test results and create a treatment plan.
B	MSK-I	**The Fallen Hiker**	A wrist injury after a fall. Explore: What bones are in the wrist? How do joints work?	Explain the specific fracture, the anatomy involved, and the biology of bone healing.
C	CVS-I	**The Breathless Musician**	A smoker with shortness of breath. Explore: How does the heart work? What is coronary artery disease?	Link smoking to atherosclerosis, explaining how it causes chest pain and breathlessness.
C	RES-I	**The Coughing Child**	A child with fever and cough. Explore: How do lungs work? What is pneumonia? How do germs cause disease?	Explain how bacteria cause pneumonia, how the body fights it, and how antibiotics work.

Table 5.2: Year 2 PBL Case Distribution

Block	Module	PBL Case Title	Focus of PBL1a (Inquiry)	Focus of PBL1b (Synthesis)
D	Neurosciences 1A	**The Wobbly Walk**	A man with numb feet and unsteady walk. Explore: What is the	Diagnose B12 deficiency neuropathy. Explain how

			spinal cord? What are nerves?	the vitamin deficiency damages nerves.
D	Neurosciences 1B	**The Sudden Headache**	A man with a terrible headache. Explore: What is a stroke? What is brain bleeding?	Explain what a brain aneurysm is, why it ruptures, and the consequences of a brain bleed.
E	GIT-I	**The Burning Discomfort**	A man with stomach pain. Explore: How does the stomach work? What causes ulcers?	Link H. pylori infection to ulcer formation and explain how different medicines work.
E	Renal-I	**The Puffy Face**	A child with a swollen face and frothy urine. Explore: How do kidneys work? What is proteinuria?	Diagnose Nephrotic Syndrome. Explain why the kidneys leak protein and cause swelling.
F	Endo-I	**The Unexplained Weight Change**	A woman losing weight but eating more. Explore: What does the thyroid gland do?	Diagnose Hyperthyroidism. Explain the overactive thyroid and its effects on the entire body.
F	Repro-I	**The Irregular Cycles**	A woman with irregular periods and acne. Explore: What is a normal menstrual cycle?	Diagnose PCOS. Explain the hormone imbalance and its effects on periods and metabolism.

6.0 Assessment in PBL

PBL is part of your **formative assessment**. You are assessed to help you improve, not to punish you.

Table 6.1: PBL Assessment Rubric

Criterion	**Excellent (4)**	**Good (3)**	**Needs Improvement (2)**	**Poor (1)**
Knowledge & Reasoning	Always links basic sciences to the case. Thinks like a doctor.	Usually applies knowledge correctly. Reasoning is logical.	Struggles to connect knowledge to the case.	Makes major errors. Cannot apply knowledge.
Self-Directed Learning	Brings excellent resources. Explains	Researches LOs well. Presents findings clearly.	Research is incomplete or confusing.	Does not do the research.

	concepts very clearly.			
Communication	Speaks clearly and confidently. Listens carefully to others.	Communicates well. Is a good listener.	Hard to understand or does not listen well.	Does not speak or is disrespectful.
Teamwork	Helps the group succeed. Always prepared and on time.	Works well with others. Reliable and prepared.	Sometimes disrupts the group or is unprepared.	Often absent or hinders the group.

7.0 Templates for Your PBL Session

Template 7.1: PBL Whiteboard Layout Template
Use this table to structure your whiteboard in every PBL session. Fill it in as a group.

PBL Session Component	Details & Notes	Example (The Pale Athlete)
Case Title		The Pale Athlete
STEP 1 & 2: Terms & Problems		
· **Unknown Terms**	List and define unfamiliar words.	· **Pallor:** Paleness of the skin. · **Exertion:** Physical effort.
· **Problem List**	List the patient's main problems.	1. Fatigue 2. Pallor (pale skin) 3. Shortness of breath on exertion
STEP 3 & 4: Brainstorm & Analysis		
· **Initial Ideas/Hypotheses**	List all possible explanations.	· Iron-deficiency anemia · Vitamin B12 deficiency · Underlying heart problem
· **Discussion & Analysis**	Note what you know and what gaps exist.	"Anemia fits the symptoms best. We need to learn what type and why."
STEP 5: Learning Objectives (LOs)		
· **List of LOs**	Write specific, researchable questions.	1. What is the structure and function of hemoglobin? 2. What is the role of iron in oxygen transport? 3. What are the common causes and types of anemia?

Template 7.2: Individual SDL Planner Template
Make a copy of this table for yourself to organize your learning between PBL1a and PBL1b.

SDL Planner Section	Your Notes
Case Title	The Pale Athlete
My Assigned Learning Objectives	1. What is the function of hemoglobin? 2. What are the dietary sources of iron?
Resources I Used	· Textbook: *Guyton and Hall Textbook of Medical Physiology*, Chapter on Blood · Video: Osmosis - "Iron Deficiency Anemia" on YouTube · Article: "Iron Metabolism" from PubMed Central
Summary of My Findings	· **Hemoglobin:** A protein in red blood cells that carries oxygen from the lungs to the tissues and returns carbon dioxide back to the lungs. · **Dietary Iron:** Found in two forms. **Heme iron** (better absorbed) from meat and poultry. **Non-heme iron** from plants like lentils, beans, and leafy greens. Vitamin C helps its absorption.

8.0 Final Advice for Success

1. **Trust the Process:** It might feel confusing at first, but the 7-step method works.
2. **Be Brave:** Don't be afraid to share a wrong idea. Mistakes are part of learning.
3. **Use Your Tutor:** Ask your tutor for guidance if your group is stuck.
4. **Help Each Other:** You are a team. Your success depends on each other.

We wish you the best of luck in your PBL journey at CMDH!