

PBL in Medical Students

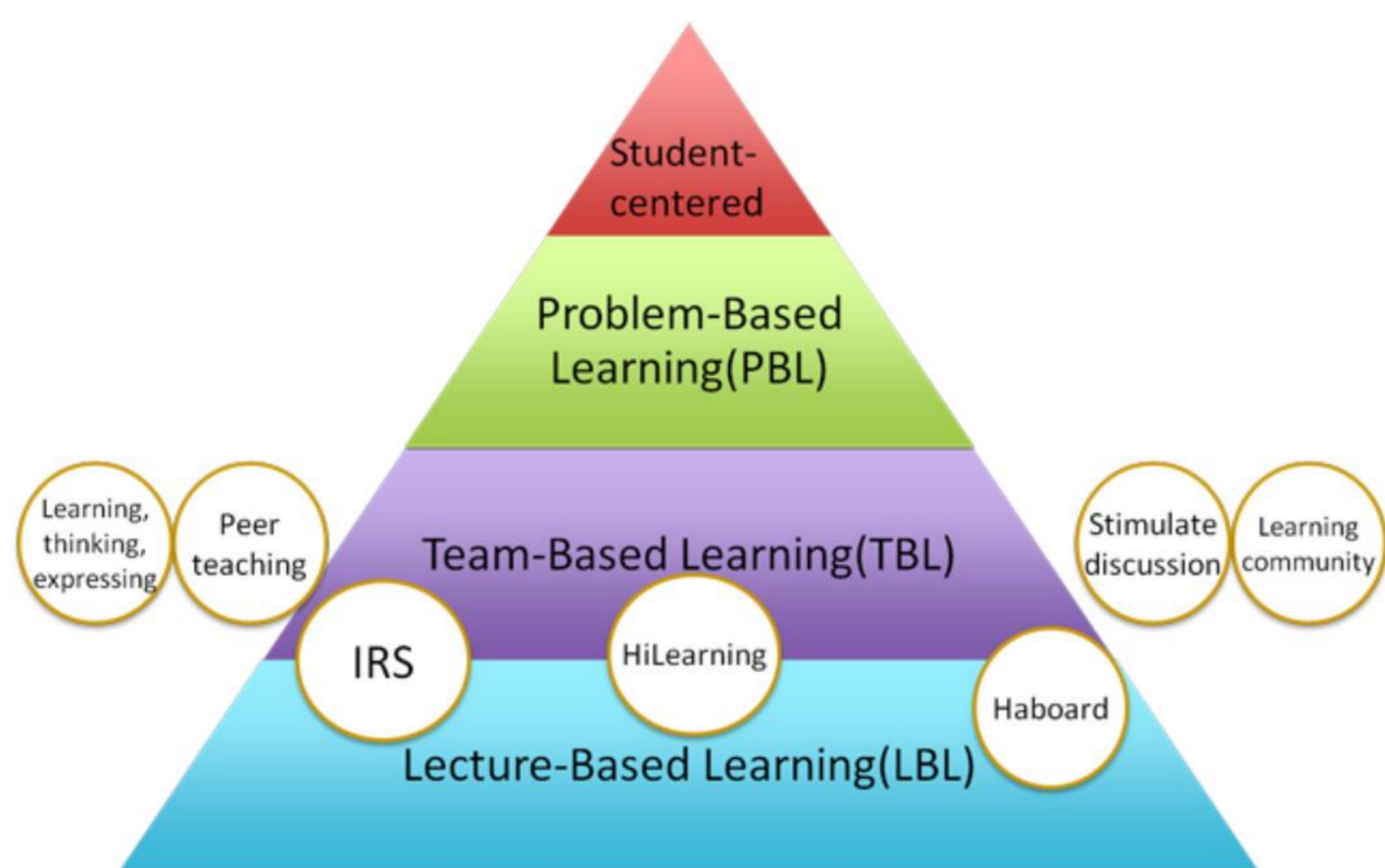


Figure 1. The "teaching" and "learning" models during class

Problem-Based Learning (PBL) is a logical step towards developing students' abilities to synthesize and integrate foundational concepts into clinical medicine.

Learning how to apply knowledge to complex problems is the basis for future advancements in science as well as excellent care of patients.

Application of basic science concepts to clinically relevant scenarios plays a powerful role in not only understanding and synergizing concepts but also in developing comfort with integrating basic science principles with clinical medicine.

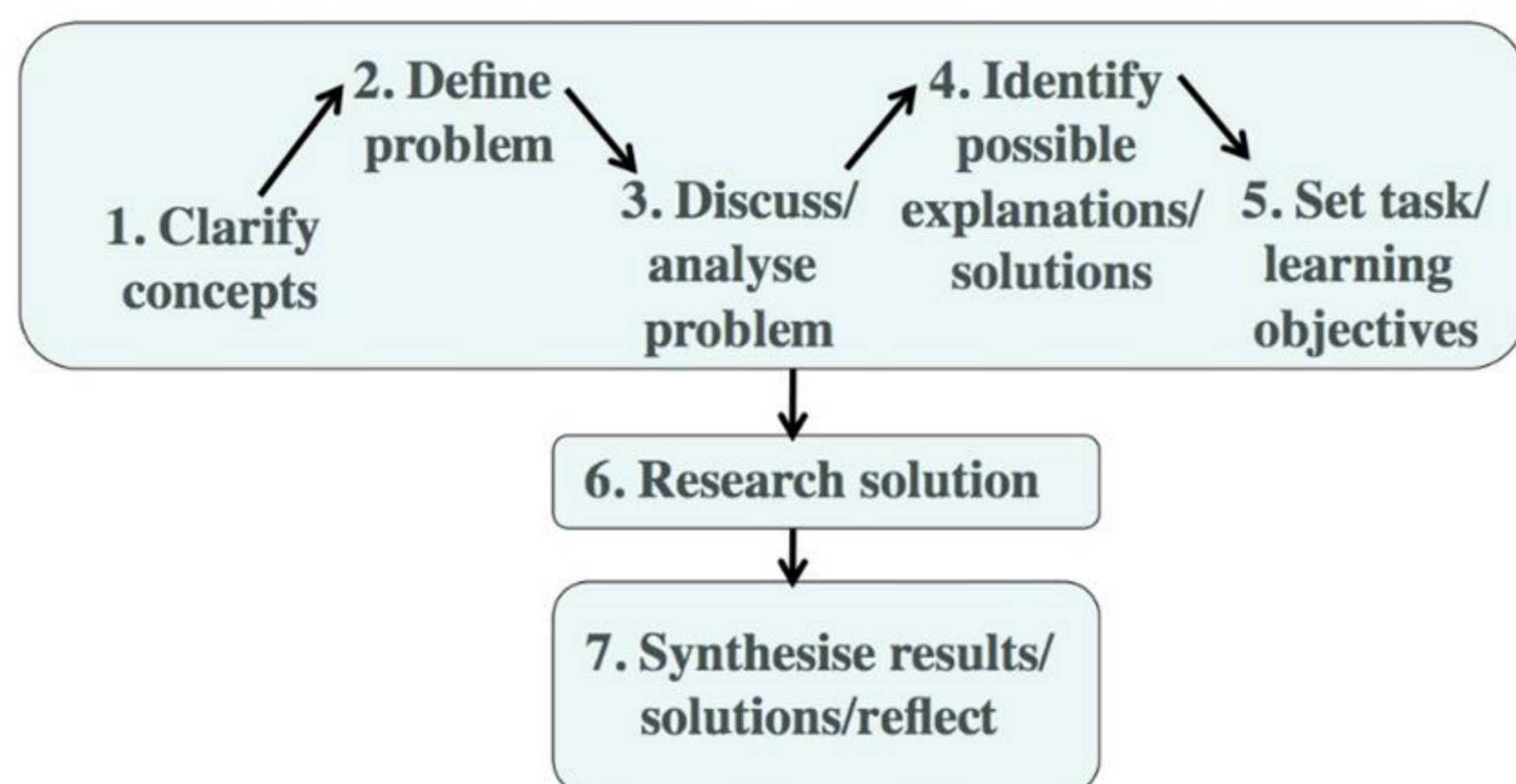
Learning ... How to learn ?

PBL processes

Before start

7-steps of PBL

The Maastricht Seven-Jump Method for PBL tutorials



(derived from Gijeselaers, 1995)

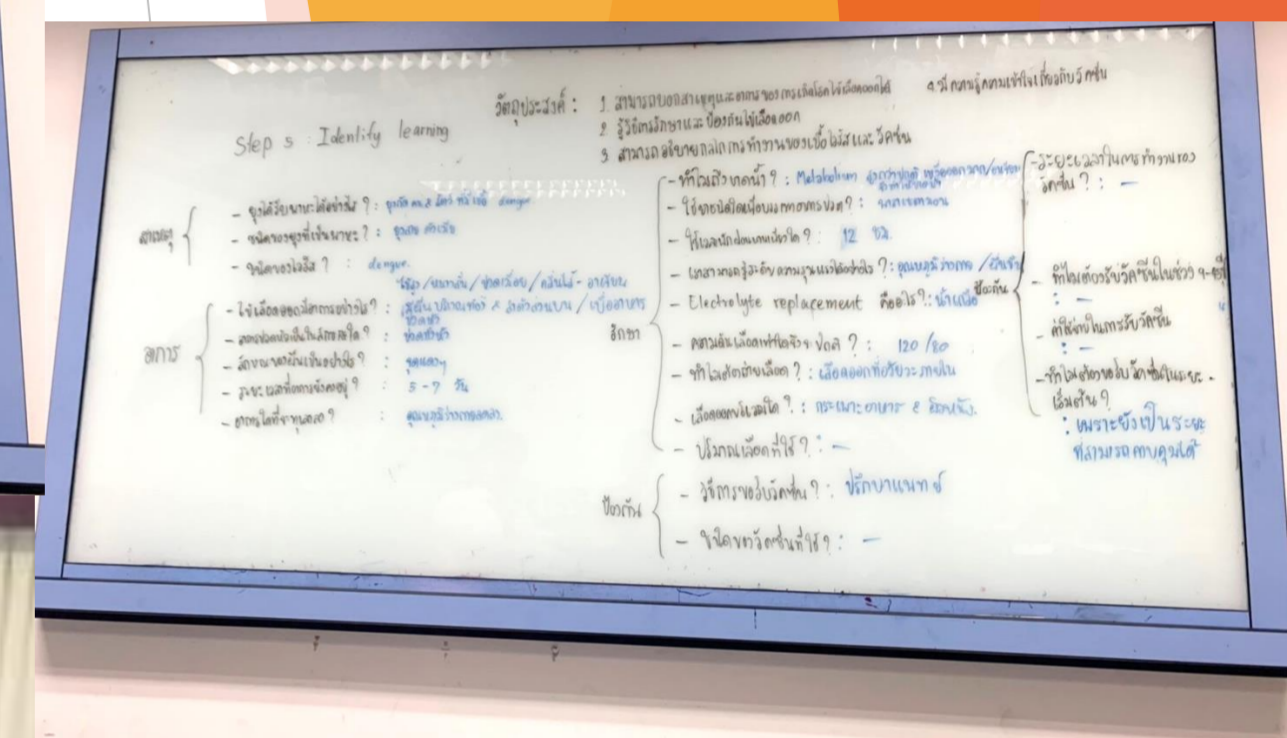
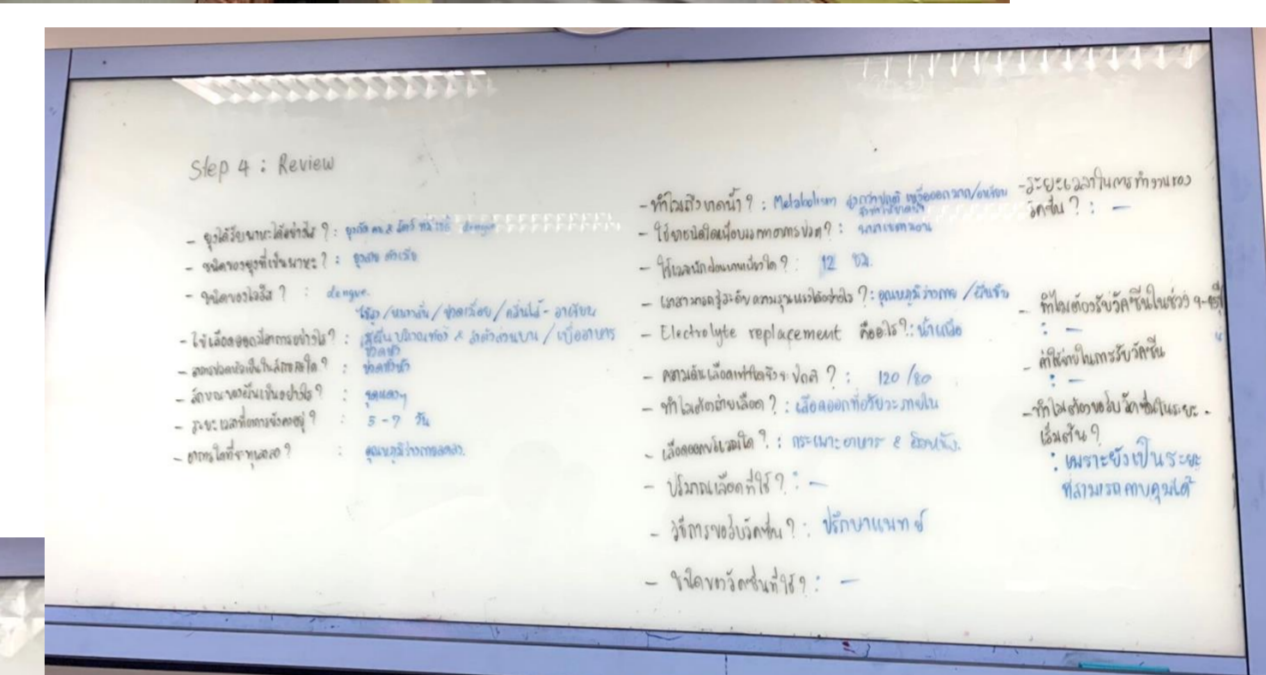
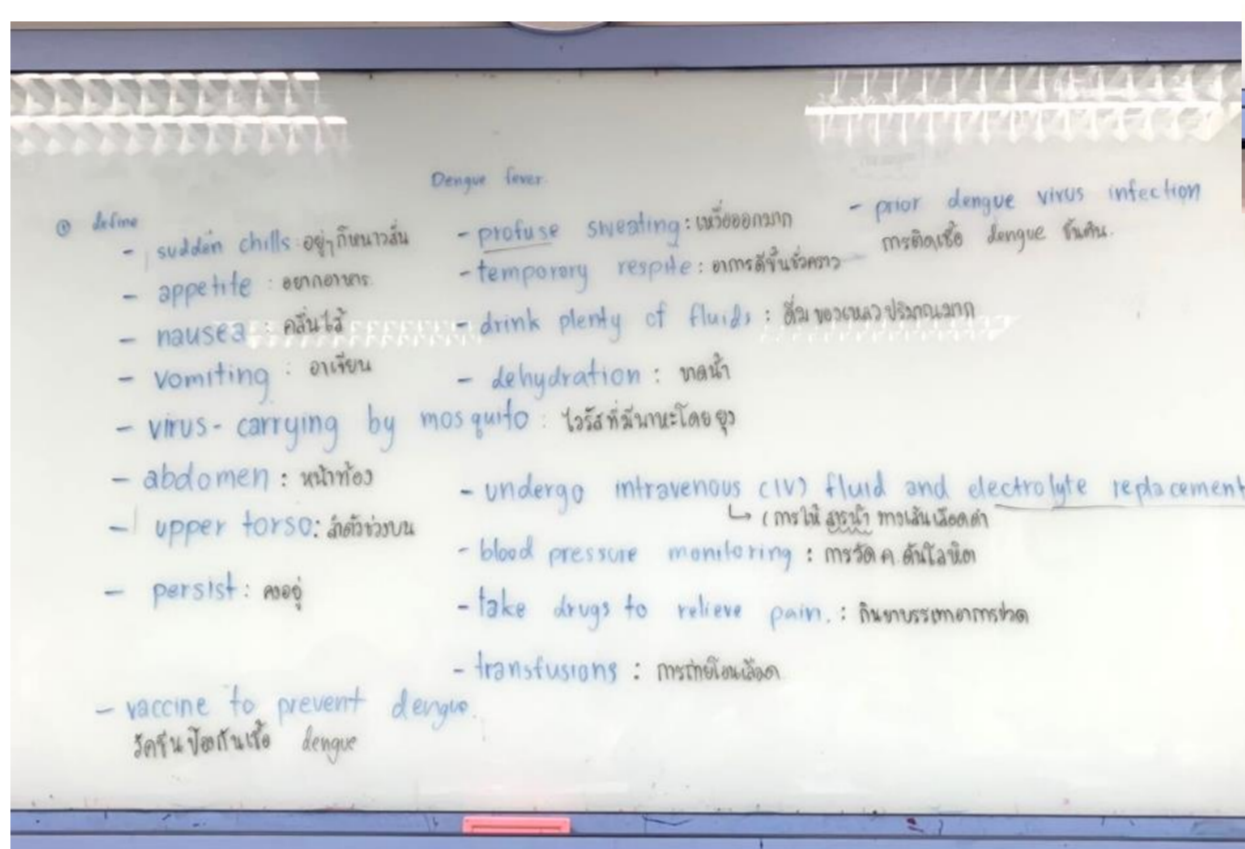
Seven-steps of PBL: logic and potential practical shortcomings

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No.	What to do?	What to do in detail?	Potential shortcomings
1	Clarification of terms and concepts	<ul style="list-style-type: none"> ask for explanation of words or concepts that are not understood if illustration: discuss what picture shows 	<ul style="list-style-type: none"> students already drift into detailed discussion of concepts students provide wrong explanations for words/concepts → tutor intervene students wait for tutor to answer their questions instead of collaborate efforts
2	Formulation of Problem Statement	<ul style="list-style-type: none"> Provide "title" for the session or formulate wider research question, i.e. "what is it about" 	<ul style="list-style-type: none"> Sloppy formulation of a very broad problem (e.g. "EU integration") Students just name topic but do identify "problem"; When assignment has title – students show tendency to copy this title, although then often no understanding of meaning
3	Brainstorm	<ul style="list-style-type: none"> Everything is allowed: collection of ideas, potential explanations in regard of problem statement, etc 	<ul style="list-style-type: none"> Students just pick keywords from assignment text and copy them on whiteboard – leads to "deconstruction" of constructed assignment rather than student-centred learning process Students do not explain why they proposed certain keyword – ask for clarification Students are "uncreative" in coming up with potential explanations, and just focus on fact-finding (What is x? What is y?)
4	Categorising and Structuring of Brainstorm	<ul style="list-style-type: none"> Keywords from Brainstorm are put into similar categories (e.g. according to question type: why, how, what consequences etc) 	<ul style="list-style-type: none"> Inexperienced students find it difficult to see patterns, get frustrated, and revolt by putting keywords together that do not fit Majority of group puts keywords randomly together without explaining why this specific system –intervene
5	Formulation of Learning objectives	<ul style="list-style-type: none"> Use categories of structured brainstorm to formulate single questions, or research task (e.g. "look for x") 	<ul style="list-style-type: none"> Sloppy formulation of questions, e.g. students do not consider any difference if questions starts with "how" or "why" Students show tendency to rely on tutor to provide "correct" learning objectives, as seems quicker to get finished for this tutorial Potential pitfall: if literature does not answer learning objective, students show tendency not to engage with additional literature or reflect on their focus but blame the literature ("the author is not relevant/suitable/expert enough");
6	Self-Study	<ul style="list-style-type: none"> Students read literature, look for additional sources, prepare answers to the formulated learning objectives 	<ul style="list-style-type: none"> Students do not spend enough time for self-study Students read texts superficially, or find it difficult to judge what are the main important points of a text Students get study material from more senior students that they bring to class – no reflection, no self-directed learning
7	Post-discussion	<ul style="list-style-type: none"> Students report back on how they answered the learning objectives; compare results but also exchange arguments 	<ul style="list-style-type: none"> Students just exchange factual knowledge and summarise the literature, instead of embarking on answering the learning objectives Students remain superficial in their reporting, and do not grasp the depth and full complexity of different aspects
	& Reflection on Learning Process	<ul style="list-style-type: none"> Self-assessment of students in learning process and peer assessment, especially in roles of chair and discussant 	<ul style="list-style-type: none"> Superficial feedback ("chair was good") Too less time allocated to reflection on learning process

References

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What student skills are encouraged for PBL-focused medical education?

Self-directed learning:

- Students must be trained to be able to use information rather than merely capable of remembering it.
- Students will become independent learners as practicing professionals. Lifelong learning uses a set of skills that develop over time and require practice.

Reflection:

- Self-assessment, group learning and active learning.
- Identify student strengths and weaknesses and figure out what it is that they do not know or thoroughly understand.
- Identify student knowledge gaps by encouraging them in formulating good questions.

Teamwork: Students are able to

- Develop skills necessary for learning in groups from peers and teach peers.
- Assist each other in integrating and applying knowledge to a given problem.
- Projects and lab work often promote these skills.

Post-discussion & Reflection

