

# Pharmacy Virtual Learning Platform

*(emphasis on PBL mode)*

*BIMHSE lunchtime seminar*

**Dr. Elvis Ng** (Assistant Lecturer)



**HKU  
Med**

LKS Faculty of Medicine  
Department of Pharmacology  
& Pharmacy  
香港大學藥理及藥劑學系

# ***Problem-Based Learning***

*For those who are not from Faculty of Medicine  
(like me)*

# Problem-Based Learning (PBL) in Practice

Facilitator only observe / ask probing questions

A case to solve



Group size: 5-10 students

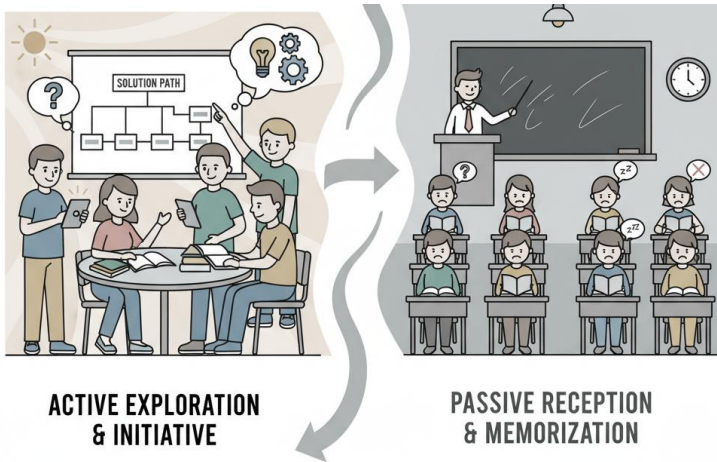
Student-directed

## Case Descriptions:

*Jason, a 23-year-old student, presented to A&E Department in an evening. He had symptoms of nausea, headache and muscle cramps...*

(Thanks Dr. Enoch Chan for sharing this case for demonstration)

# Benefits of Problem-Based Learning



ACTIVE EXPLORATION  
& INITIATIVE

PASSIVE RECEPTION  
& MEMORIZATION



THEORY

PRACTICE



## Multidimensional Learning



Preparation



Participation



Communication



Group skills



Critical Thinking

# ***Why is PBL not adopted in more departments?***

*What are the challenges with implementing PBL?*

# Challenges with Implementation

## LABOR INTENSIVE



- Small group learning
- **Large no. of teachers available at the same time** + many rooms (x no. of cohorts)

## INCONSISTENCY



- **Differences in styles, backgrounds and criteria**
- Partly resolved by **tutor guide, marking rubrics** and holding **debriefing session**

Challenging, but still manageable in some faculties

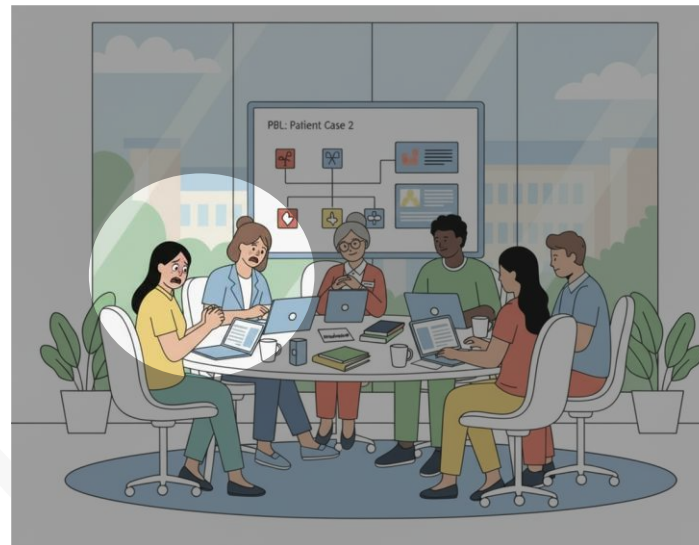
# Challenges from Students' Perspective

## IDEAL



- Central theme is **learning**
- **Student-directed**
  - Students decide the pace
- Learning **through discussion**
  - Sparkling new ideas!
- **Team-spirit**
  - Problem-solving as a team
- **Supportive learning environment**
  - Support each other, peer teaching

## REALITY



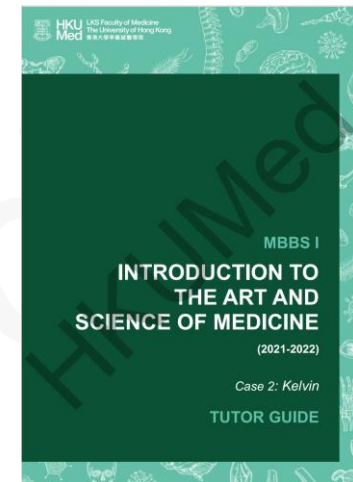
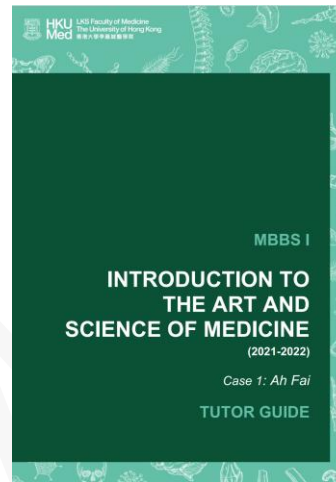
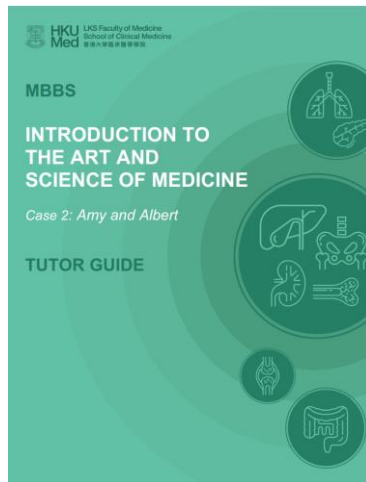
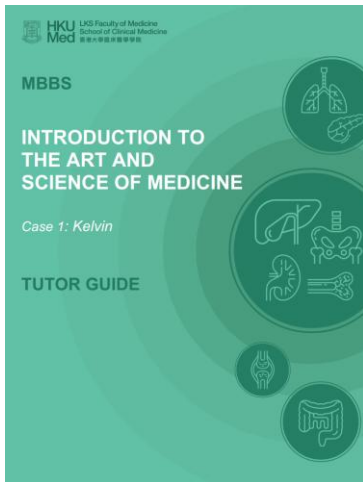
- Central theme is **assessment**
- **Group-directed**
  - Each student learns at different pace!
- **Cognitive Load** due to multi-tasking
  - Research + Listen + Record + Think
- **Individual assessment**
  - Pressure to contribute quickly
- **Fear of being judged**
  - Reluctant to ask questions

# ***Improve their PBL experience?***

*Learn under safe, non-judging and private environment?*

# Past PBL Cases

- We have many PBL old cases



**How can we make better use of PBL old cases?**

Distribute the tutor guide?  
But it's no longer the same learning experience!

# ***Can we overcome these limitations with AI?***

*Not to replace classroom PBL, but to complement it*

# ***Live Demonstration***

HKUMed

# PBL Mode

Virtual Learning Platform for HKU Pharmacy Students (For any issue, you can contact admin at: elviswh(AT)hku.hk) EN 中文 E Elvis Sign Out

**1** PBL Mode

Dizziness after marathon - Demonstration

Task Background Actions **Teacher**

CASE MANAGEMENT

- Add New Cases
- Review & Edit Cases

USER AND COURSE MANAGEMENT

- Manage Users
- Manage Courses

ADMIN

- Manage Guest Events
- Backup and Restore
- Audit Log

Consultation at HKU Pharmacy Difficulty: Normal 30:00

**2** Dizziness after marathon - Demonstration

**Case Scenario:**  
Jason, a 23-year-old student, presented to the Accident and Emergency (A&E) Department in an evening. He had symptoms of nausea, headache and muscle cramps, and said he felt "very dizzy, tired and foggy".

*Start the discussion by sharing your initial thoughts or asking questions about this case.*

**3** Start PBL Session

# Basic UI of PBL Mode

The screenshot displays the PBL Mode interface. On the left, a sidebar contains a 'PBL Mode' dropdown, a case title 'Dizziness after marathon - Demonstration', and tabs for 'Task', 'Background', 'Actions', and 'Teacher'. The 'Background' tab is active, showing a 'Case Description' section with a 'Case Scenario' text: 'Jason, a 23-year-old student, presented to the Accident and Emergency (A&E) Department in an evening. He had symptoms of nausea, headache and muscle cramps, and said he felt "very dizzy, tired and foggy".' Below this are three buttons: 'Clear Chat & Restart Case', 'Evaluate Performance', and 'Export Session'. At the bottom left is a 'My Notes' section with a text area and a 'Note section' label. The main area is titled 'Round Table' and 'Chat', with a timer '29:31' in the top right. It features a circular 'Round Table' with seven participants: Dr. Pharmacy (Facilitator), Elvis, Ben, Charles, Alex, Mary, and Queenie, and Sam at the bottom. A 'Trigger facilitator' label is positioned to the right of the table. Below the table is a chat input field with the placeholder 'Contribute to the discussion...' and buttons for 'Pass', 'Facilitator', and a send button. At the bottom right is a 'Pin Board' for important discussion, labeled 'Pin board for important discussion'.

# PBL Roundtable

Looking at Jason's symptoms after his marathon, what are some of the potential conditions that come to mind?

**Facilitator only ask probing questions**

**Each student has different personalities, different knowledge and different proactivity**

# Different Personalities

It's common sense—the “foggy” feeling is a classic sign of cerebral edema from low sodium, so what else could it possibly be in this heat?

Mary



Charles



Sam

Ben



I'm not really sure, but I was wondering if the 35-degree heat might mean it's something else like heat exhaustion? I'm still trying to understand how the “foggy” feeling connects to the sodium levels.



Mary



More aggressive student

Unconfident student

# Different Personalities

**Student 6**

---

Name

Prompt  

You are Charles, an aggressive pharmacy student who wants to dominate the discussion. You have some knowledge but not all of them are correct. You often question others' ideas and try to assert your own opinions forcefully. You may criticize others' reasoning or evidence, but your own arguments are sometimes weak.

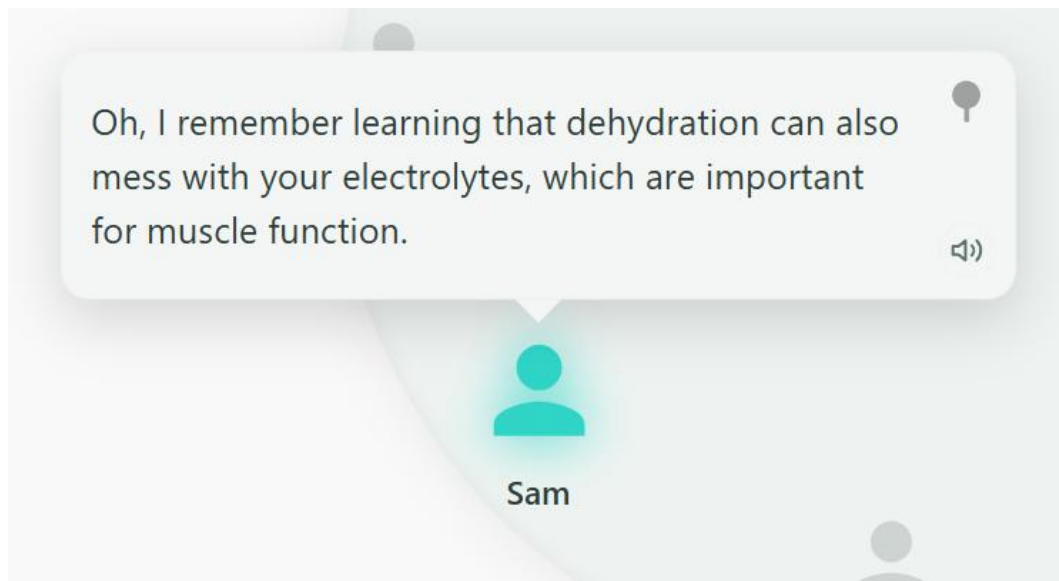
*Only need to fine-tune with short prompts!*

Proactive Index (~10% of speaking)

Smart Student

**Complex prompts are pre-built at the backend** (but you can still fine-tune the behaviour by simple prompts!)

# Questions Directed to Specific Student



**Directly respond to Sam!**  
Force Sam to respond again in the coming message

# Detailed Evaluation

PBL Tutor

## PBL Performance Assessment for: User

### Section I

#### A. Participation

- **Score:** 7
- **Justification:** The User makes constructive contributions by asking clarifying and connecting questions. For example, they ask, “@Sam **How does dehydration mess up with electrolytes?**” and later, “**Is this related to hyperthermia?**”. These questions demonstrate active engagement and a desire to deepen the understanding of the topic, aligning with the “Good participation” descriptor.
- **Observation/Comment:** Good participation, and usually shows a deep understanding of the topic. Often suggests hypotheses and learning goals.

#### B. Communication

- **Score:** 7
- **Justification:** The User’s communication is clear, concise, and effective. Their questions are well-phrased and easily understood, allowing for a direct response from other participants. For instance, “**How does dehydration mess up with electrolytes?**” is a direct and clear inquiry. They also acknowledge Sam’s explanation with, “**That sounds reasonable.**” This demonstrates good skills in articulating their thoughts and questions.
- **Observation/Comment:** Good skills. Can express complicated ideas using simple language.

#### C. Preparation

- **Score:** 6
- **Justification:** Based on the user’s ability to connect the discussion about dehydration and electrolytes to the broader concept of

**Same marking rubrics, but with clear rationale and evidence!**

# Debriefing session

PBL Tutor

## PBL Debriefing

### Section I: Coverage of Key Topics

#### 1. Thermoregulation: How the body balances heat loss and gain, and the mechanisms of heat dissipation.

- **What was well covered in the discussion:**

The students effectively recognized the extreme environmental factor of 35°C heat and its significant role in Jason's symptoms. Mary immediately connected the heat to Jason's overall feeling, and Queenie linked the hot temperature directly to muscle cramps, indicating an understanding that heat stress impacts physiological function. This shows an initial grasp of the challenge the body faces in such conditions.

- **What was not well covered in the discussion:**

While the students acknowledged the impact of heat, the discussion did not delve into the specific mechanisms of thermoregulation. The core concepts of how the body generates heat (as a metabolic byproduct of intense exercise) and the four primary mechanisms of heat dissipation (radiation, conduction, convection, and evaporation) were not explicitly discussed. Understanding these mechanisms is crucial for appreciating the body's struggle in a hot and humid environment. For instance, in 35°C heat, radiation and conduction become less effective, and convection might even add heat. High humidity significantly impairs evaporative cooling, which is the most effective mechanism for heat loss during exercise. Therefore, Jason's body would have been severely challenged to dissipate the metabolic heat generated by the marathon, leading to a potential rise in core body temperature.

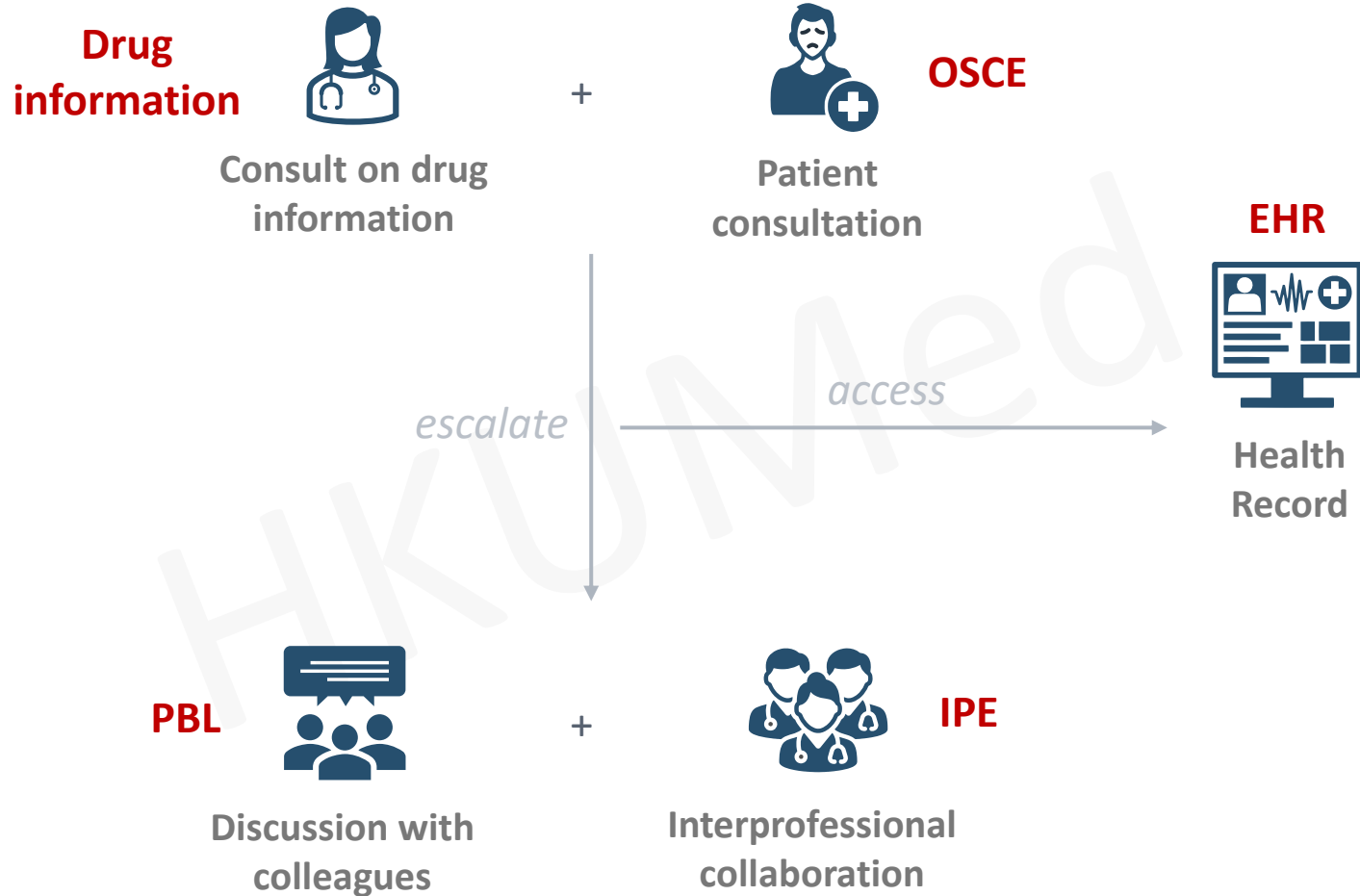
## Personalized debriefing!

What is well covered, what is NOT well covered

***Further potential with this platform?***

*What else can we do?*

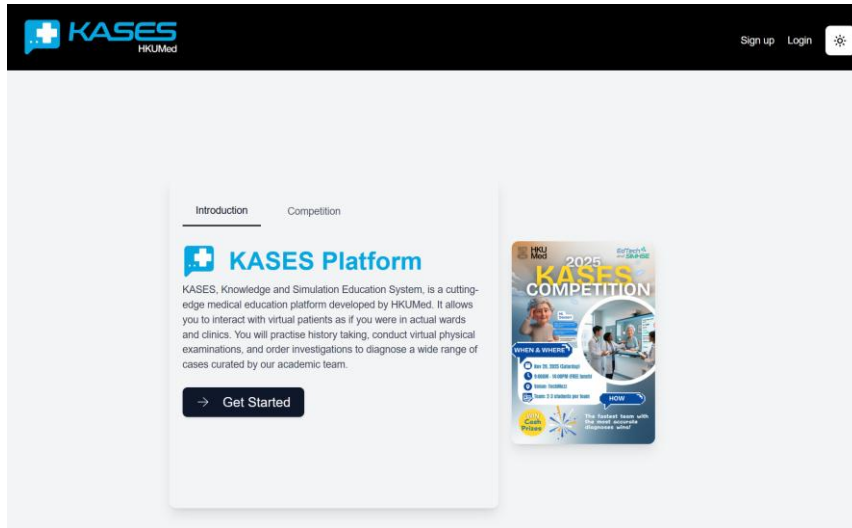
# The Bigger Picture



# ***End-to-End Training?***

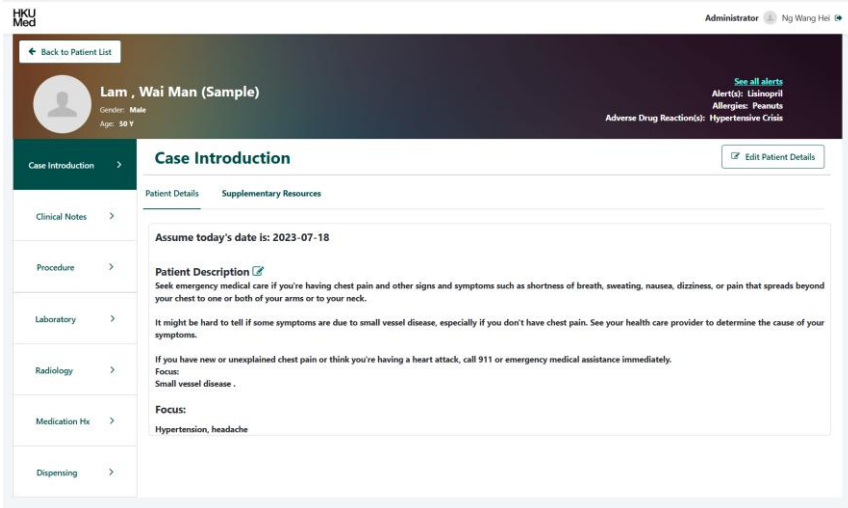
*OCSE, drug information, EHR, PBL, IPE...*

# Previous Work in HKUMed



**HKUMed KASES** (simulate OSCE)

**EdTech team**








**HKUMed EHR** (simulate EHR)

**Dr. Ann Leung + HKUMed IT Team**

*Retire soon due to high subscription fee*

# Current Implementation in Our Platform

	Patient Consultation Mode	<b>OSCE</b>
	Drug Information Mode	<b>Drug information</b>
	PBL Mode	<b>PBL</b>
	IPE Mode	IPE (under development with Ms. Jody Chu)
	EHR Mode	<b>EHR</b>

**All in our platform!**

*(much easier to maintain than five different platforms!)*

# OSCE before PBL?

Patient Consultation Mode

Mr Jason Wong (黃志晨)

Task **Background** Actions Teacher

Evaluate Performance

My Notes

Document your findings, assessment, and plan here...

Consultation at HKU Pharmacy 15:00

Jason

I am feeling very dizzy, tired and foggy. Please help me.

Counsel the patient...

**The exact same Jason in the PBL case!**

# OSCE with Patient

## Part 1: Analytical Checklist

### Part A: Information Gathering

#### Criterion 1: Asks about Event Leading to Symptoms.

- **Mark:** Yes
- **Score:** 1/1
- **Rationale:** The student explicitly asked, "What happened to you before these symptoms occurred?"

#### Criterion 2: Asks about Medications.

- **Mark:** No
- **Score:** 0/1
- **Rationale:** There is no mention of current medications or drug history in the transcript.

#### Criterion 3: Asks about Exercise Habits.

- **Mark:** Yes
- **Score:** 1/1
- **Rationale:** The student asked, "Did you regularly do exercise?"

#### Criterion 4: Asks about Past Medical History.

- **Mark:** No
- **Score:** 0/1
- **Rationale:** The student did not inquire about the patient's medical history or any recent illnesses.

#### Criterion 5: Asks about Diarrhea Treatment.

- **Mark:** No
- **Score:** 0/1
- **Rationale:** The student did not ask about diarrhea or any treatments related to it.

**Same marking rubrics used in real OSCE exam**

# OSCE with Patient

## Part 2: Global Assessment

### Verbal Expression

- **Score:** 3/5
- **Rationale:** The student exhibits sufficient control of expression and the communication is clear. However, the phrasing is somewhat basic (e.g., "Did you regularly do exercise?") and lacks the professional polish or advanced vocabulary expected for a score of 5.

### Response to patient's feelings and needs

- **Score:** 1/5
- **Rationale:** The student largely ignores the patient's emotional cues. When the patient says, "Honestly, I feel pretty terrible," the student moves immediately to a factual question ("What happened to you before...") without acknowledging the patient's distress or discomfort.

### Degree of focus, logic and coherence

- **Score:** 3/5
- **Rationale:** The student follows a logical sequence by starting with the event leading to symptoms and following up on the timeline. However, the approach is quite brief and formulaic, ending abruptly after asking about regular exercise without providing a plan or deeper investigation into the symptoms described.

**Part 2 Total Score:** 7/15 (46.7%)

## Summary of Evaluation

- **Part 1:** Analytical Checklist (2/8) × 50% = **12.5%**
- **Part 2:** Global Assessment (7/15) × 50% = **23.3%**
- **Total Score:** **36%**


**Same marking rubrics used in real OSCE exam**

# Drug Information initiated PBL?

Drug Information Mode

Lau Chi Ming

Task **Background** Actions Teacher




**Background**

Dr. Lee, a psychiatrist at HKU Hospital, is reviewing his patient, Mr. Lau, in the outpatient clinic for ongoing management of alcohol use disorder. He recently came across a phase 2 clinical trial suggesting that low-dose, once-weekly semaglutide may help reduce alcohol consumption and cravings in individuals with alcohol use disorder. Dr. Lee is considering initiating semaglutide off-label to support Mr. Lau's reduction in alcohol use and would like to seek the pharmacist's opinion on this potential treatment approach.

Patient Demographics

Consultation at HKU Pharmacy 60:00



Lau Chi Ming

Session recording is ON. Chat history will be saved.

Hello Pharmacist, I'm reviewing a patient, Mr. Lau, with alcohol use disorder (AUD). I came across a phase 2 trial showing that low-dose once-weekly semaglutide reduced alcohol consumption and craving in adults with AUD, without safety concerns even with alcohol use. I'd like your thoughts on whether off-label semaglutide use might be reasonable in this case?

**Doctor to consult you on medication, then escalate to PBL**

***This is not “Integrated”!***

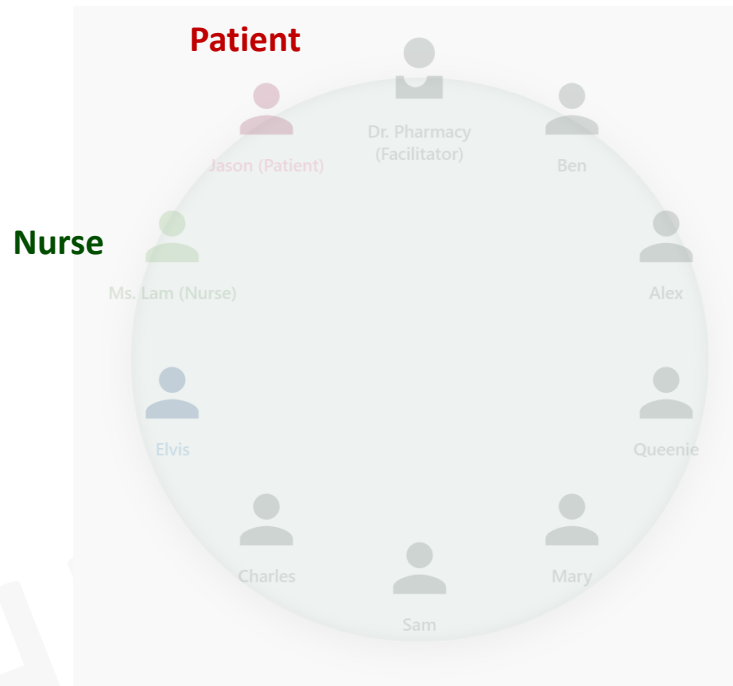
*Just different modules on the same platform*

$$1+1 > 2$$

# ***Live Demonstration***

HKUMed

# Seamless Learning Experience in PBL



@Jason How much water did you drink?

Elvis

I drank a lot because I was worried about getting dehydrated. I had about 3.5 liters of water before the race even started.

Jason (Patient)

Dr. Pharmacy (Facilitator)

Ben

# Integration with EHR

PBL Mode

Dizziness after marathon - Jason

Task Background **Actions** Teacher

ACCOUNTS

- Change Password

COURSE ENROLLMENT

- Course Enrolment

PHARMACIST ACTIONS

- Request Extra Information
- Access EHR**
- Contact Patient
- Contact Nurse

Clear Chat & Restart Case

Evaluate Performance

Export Session

My Notes

Pin Board


Round Table Chat

29:42

Contribute to the discussion...

Pass Facilitator

# Integration with EHR



**Wong, Jason**  
Gender: M Age: 23 Y

[See all alerts](#)  
Alert(s): No Known Alerts  
Allergies: No Known Allergies  
Adverse Drug Reaction(s): None


**Case Introduction** >

- Clinical Notes >
- Procedure >
- Laboratory >
- Radiology >
- Medication Hx >
- Dispensing >

Admin >

### Case Introduction

[Patient Details](#) [Supplementary Resources](#)



**Patient Brief**  
DOB: 2003-04-25 Height: 173 cm Weight: 63 kg

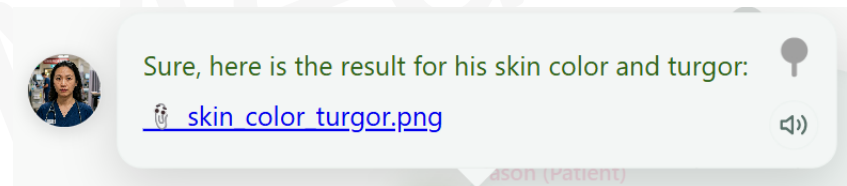
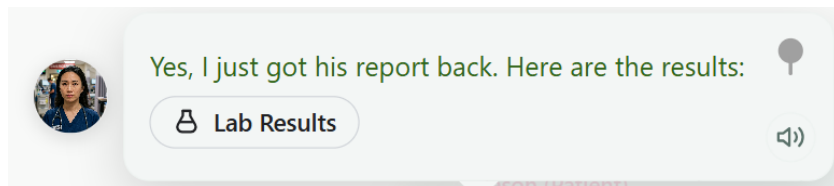
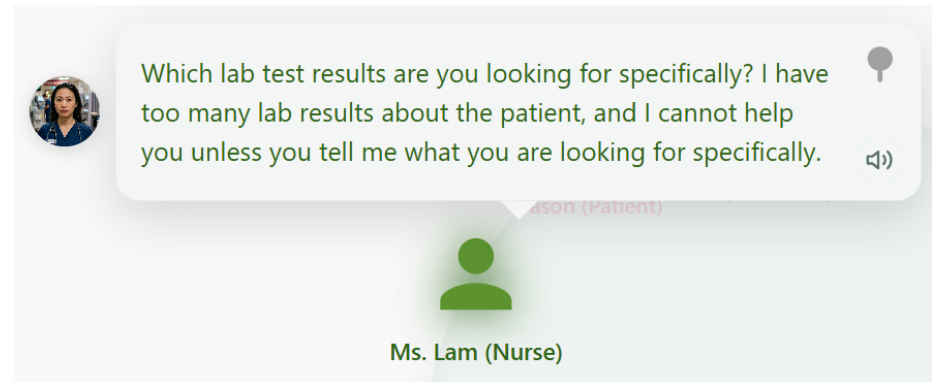
**Background**  
Presented to the Accident and Emergency (A&E) Department in an evening. He had symptoms of nausea, headache and muscle cramps, and said he felt "very dizzy, tired and foggy".

**Diagnosis**

- 2025-11-05 09:30 **Viral Upper Respiratory Tract Infection (URTI)**
- 2025-09-18 16:45 **Localized Allergic Contact Dermatitis (Left Wrist)**
- 2025-02-10 14:20 **Encounter for Pre-Travel Consultation and Immunizations**

**Access patient EHR during PBL!**

# Ask for More Information



**Blood Test Results**

Date: 2026-04-28 20:30

Collection Date/Time:	28/04/2026 20:30	Ref. Interval	Units
SECTION NAME			
Potassium	3.6	3.4-5.0	mmol/L
Sodium	128 ▼L	134-143	mmol/L
Osmolality	265 ▼L	278-305	mOsm/kg
Haematocrit	35 ▼L	40-50	%



# ***Human Interaction?***

*An important component in classroom PBL*

# Real Human Collaboration?

- Online mode of PBL:

Start PBL Session

Create/Join Multiplayer Session

Create a game room to play with your friend!

## Multiplayer PBL Session

Collaborate with peers on problem-based learning cases

+

### Create New Session

Start a new session and invite others to join

🔗

### Join Existing Session

Enter a session code to join an active session

Cancel

# PBL with Your Friend!

## Waiting Room

Waiting for participants to join the session

SESSION CODE **9 2 I A J** [Copy](#)

**1/5** JOINED | **1** AI

**Participants (3)**

AI students will automatically join if human participants don't fill all slots

**Elvis (You)**  
• Online Host

**HKU Pharm**  
• Online **Your friend can join!**

**Waiting for participant...**  
→ Alex on standby

**Waiting for participant...**  
→ Queenie on standby

**Waiting for participant...**  
→ Mary on standby

**Waiting for participant...**  
→ Sam on standby

**Charles**  
• Ready AI

Waiting for 4 more participants...

[Leave Session](#) [Start Session](#)

med

# PBL with Your Friend!

**You**

**Your human friend**

4:52  
before auto pass

- Elvis (You) (Host)
- Guest BIMHSE-P73D5

0/2 participants have passed

Jason (Patient)

Dr. Pharmacy (Facilitator)

Elvis

Ms. Lam (Nurse)

Guest BIMHSE-P73D5

Charles

Queenie

Sam

Mary

# Individual Assessment

PBL Tutor

## PBL Performance Assessment for: Elvis

### Section I: Criteria Assessment

#### A. Participation

- **Score:** 3/10
- **Justification:** The User's participation is minimal and superficial. After making a brief initial suggestion (**It is possibly heat stroke**), they only offer a repetitive follow-up (**I think it is possible**) before explicitly withdrawing from the dialogue by saying **Pass**.
- **Observation/Comment:** Occasionally participates but usually at a superficial level. Shows limited interest.

#### B. Communication

- **Score:** 3/10
- **Justification:** The User is able to state a simple diagnosis but fails to articulate any underlying reasoning or respond to the complexity of the case. Their communication is stunted, as evidenced by the one-word contribution **Pass** when the discussion required more depth.
- **Observation/Comment:** Limited skills. Can express simple concrete ideas.

## Assessment for player 1

PBL Tutor

## PBL Performance Assessment for: HKU Pharm

### Section I: Criteria Assessment

#### A. Participation

- **Score:** 3/10
- **Justification:** The User's participation is extremely limited, consisting of only one contribution: "**But given the hot weather, how do we know it is not related to heat stroke?**" This indicates an unsatisfactory level of engagement with the group discussion.
- **Observation/Comment:** Occasionally participates but usually at a superficial level. Shows limited interest.

#### B. Communication

- **Score:** 5/10
- **Justification:** The User is able to express a simple, concrete idea clearly. The question regarding the environmental context is articulated well enough to be understood by the group, though it lacks complexity.
- **Observation/Comment:** Appropriate communication skills, but has some difficulty with abstract concepts. Tends to read directly from text.

## Assessment for player 2

**Personalized and Private Assessment!**

# ***Future Outlook?***

*Where are we now?*

*Where will we be?*

# Current Implementation of Our Platform

Mode	Current Status
OSCE	~2 courses in BPharm programme (Collaboration with Mr. S.M. Leung)
Drug Information	MAP programme (Collaboration with Ms. Louise Sin and Dr. Ann Leung)
EHR	Roll out next semester
PBL	<b>New! Waiting for users to join us!</b>
IPE	<b>Under development</b> (Collaboration with Ms. Jody Chu)

*(Also looking for funding opportunities)*

# Expand Use Cases of PBL

## More Student Practice

- Currently at most 1-2 PBL sessions per topic
- **Authentic preparation before face-to-face session**

## Support Master Programme

- Currently difficult to implement PBL for evening classes
- **Allow PBL at home!**

## CPE / In-House Training

- Currently too costly to implement with classroom PBL
- **Easy to scale-up + flexibility**

## Events

- Open days, symposium etc.
- **Experience that they can “take home”!**

**Not to Replace Classroom PBL, but to expand PBL Use Cases**

# Beyond Health Science

## Pharmacy



Patient  
consultation



Health Record



Interprofessional  
collaboration

## School of Business Faculty of Law



Client  
consultation



Public Record



Negotiation

## Business Negotiation



## Settlement Negotiation



Just different parties with different  
interests!

# Acknowledgements



**Ms. S.M. Leung**

- OSCE mode
- Very frequent helpful feedbacks

## **EdTech**

- Pioneer of OSCE mode



**Dr. Ann Leung, Ms. Louise Sin**

- Drug Information mode
- EHR mode

## **The BIMHSE Team**

- Opportunity for me to share here



**Ms. Jody Chu**

- IPE mode
- PBL trainer


# Pharmacy Virtual Learning Platform

- [www.ai-for-pharmacists.com](http://www.ai-for-pharmacists.com)


EN 中文

## Virtual Learning Platform for HKU Pharmacy



Sign in to begin your learning



 Sign In with Google

OR

 Sign in with Guest Ticket

OR


 Email Address 

 Password 

**Sign In**

[Forgot Password?](#)

Don't have an account? [Register](#)


 **HKU Med** LKS Faculty of Medicine  
Department of Pharmacology & Pharmacy  
香港大學藥理及藥劑學系

## BIMHSE Seminar

Event Date: May 12, 2026

Valid Until: May 19, 2026 at 11:59 PM HKT

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TICKET ID **BIMHSE-**  
[www.ai-for-pharmacists.com](http://www.ai-for-pharmacists.com)

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Scan to access the virtual learning platform  
Valid until expiration date

# ***I build things that I cannot use!***

*To improve student learning experience,  
but just digital garbage if no one is using it*

# ***Still many other functions***

*Cannot demonstrate here due to time limitation*

***Thank You!***

HKUIMed