



## المؤتمر السنوي الأول للتقييم الذاتي لمعايير الجودة والاعتماد الأكاديمي



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# PROBLEM BASED LEARNING IN 21 UMAS

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# **PROBLEM BASED LEARNING IN 21 UMAS**

التعلم المبني على المشكلات في جامعة  
21 سبتمبر للعلوم الطبية والتطبيقية

▶ **DR. BILQUIS MOSLEH HAJAR**

*“Nothing can be taught,  
everything can be learnt.”*

Chinese proverb

# Characteristics Needed in College Graduates

- 1) High level of communication skills.
- 2) Ability to define problems, gather and evaluate information, develop solutions.
- 3) Team skills -- ability to work with others.
- 4) Ability to use all of the above to address problems in a complex real-world setting.



**SPICES**

**New-Innovative  
Curricula**

**SPICES**  
← **Continuum** →

**Traditional  
Medical Curricula**

**S** Student-centered

Teacher-centered

**P** Problem-based

Information gathering

**I** Integrated

Discipline-based

**C** Community-based

Hospital based

**E** Elective

Standard

**S** Systematic

Apprenticeship-based

- ❑ PBL students generate explanations that are *more* accurate, coherent and comprehensive than non PBL students.
- ❑ They transfer the reasoning strategies that they are taught and are more likely to use science concepts in their explanations. (Hmlo, 1998)

## History of PBL

### ▶ Background

- ▶ Information is not all you need to solve a problem
- ▶ The amount of information is growing exponentially no one person can keep up

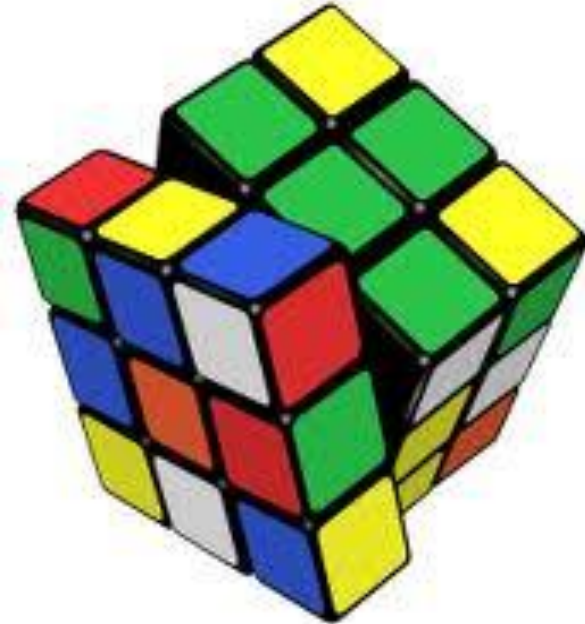
### ▶ Started in medical school

- ▶ 1913 Sir William Osler (concerning the education of medical students) “too great a reliance on lectures and on students’ capability of memorising a growing number of items of knowledge.”
- ▶ 1950’s integrated systems teaching in USA medical school
- ▶ 1960’s PBL introduced in Canadian medical school
- ▶ 1970’s many USA and worldwide medical schools adopted PBL
- ▶ 1990’s introduced into medical schools in UK by Manchester, Glasgow and Liverpool universities.



## Problem based learning (PBL)

PBL is an educational format that is based on discussion and learning about a clinically - based problem.



# Problem Solving vs Problem Based Learning

- ▶ Problem Solving: Arriving at decisions based on prior knowledge and reasoning
- ▶ Problem Based Learning: The process of acquiring new knowledge based on recognition of a need to learn.

## Goals of PBL

1. To improve the motivation of the students.
2. To stimulate integration of disciplines.
4. To improve self directed and long term learning.
5. To improve critical thinking, clinical reasoning, decision making and problem solving.
6. To make education more student oriented.
7. To stimulate formative evaluation.
8. To stimulate small group learning and development of interpersonal communication skills.

## Disadvantages of PBL

- ▶ Tutors who can't “teach”
- ▶ Demanding of staff time
- ▶ Stressful for students and staff
- ▶ Information overload
- ▶ May be difficult to implement when class sizes are large or if there is lack of enthusiasm for the idea.

## The Seven Step Model (Wood, 2003)

- ▶ **Step 1** Identify and clarify unfamiliar terms presented in the scenario, (allocate a scribe and a chairperson, define rules)
- ▶ **Step 2** Define the problem or problems to be discussed;
- ▶ **Step 3** Ideas storming session to discuss the problem(s),
- ▶ **Step 4** Review steps 2 and 3 and arrange explanations into tentative solutions;
- ▶ **Step 5** Formulate learning objectives;
- ▶ **Step 6** Private study (**all students** gather information related to each learning objective)
- ▶ **Step 7** Reconvene - Group shares results of private study

All participants have role to play

# Roles of participants

Scribe

- Record points made by group
- Help group order their thoughts
- Participate in discussion
- Record resources used by group

Tutor

- Encourage all group members to participate
- Assist chair with group dynamics and keeping to time
- Check scribe keeps an accurate record
- Prevent side-tracking
- Ensure group achieves appropriate learning objectives
- Check understanding
- Assess performance

Chair

- Lead the group through the process
- Encourage all members to participate
- Maintain group dynamics
- Keep to time
- Ensure group keeps to task in hand
- Ensure scribe can keep up and is making an accurate record

Group member

- Follow the steps of the process in sequence
- Participate in discussion
- Listen to and respect contributions of others
- Ask open questions
- Research all the learning objectives
- Share information with others

## Good PBL Facilitator.

- ▶ A knowledge of the PBL process
- ▶ Commitment to student directed learning
- ▶ Ability to generate a non-threatening environment whilst still acting to promote discussion and critical thinking
- ▶ An ability to facilitate and not teach.
- ▶ Willingness to make constructive evaluation of student and group performance.
- ▶ Availability of well constructed facilitator guide.

A *Teacher*  
is a compass that activates  
the magnets of *curiosity*  
*knowledge & wisdom*  
in the pupils.  
Ever Garrison

# How to Facilitate PBL?

- ▶ Small groups of students (<8).
- ▶ Groups usually meet twice a week for around 2 hours.
- ▶ At the first meeting – new situation or problem (trigger).
- ▶ Identification of the main issues and questions.
- ▶ Period of individual study (2-3 days) - group reconvenes.
- ▶ Group discussion and sharing knowledge.
- ▶ Supporting activities (labs, lectures).
- ▶ Presentation.





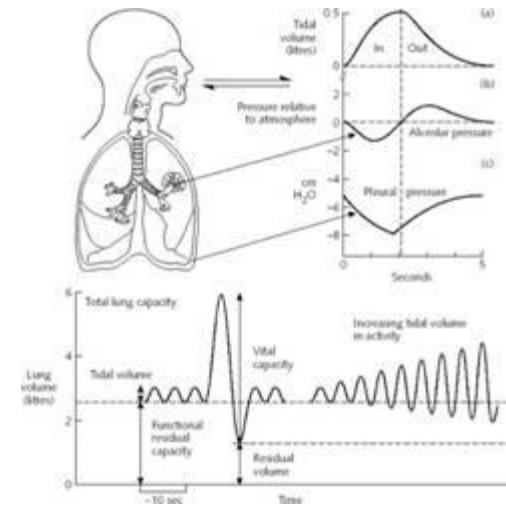
## Art of constructing PBL Scenarios

An instructional student-centered approach which uses **carefully constructed clinical problems** as a context for students to: define their learning needs, conduct self-directed enquiry, integrate theory and practice, and apply knowledge and skills to develop a solution to a defined problem.



### PBL Trigger material

- ▶ Paper based clinical scenarios
- ▶ Experimental or clinical laboratory data
- ▶ Photographs
- ▶ Video clips
- ▶ Newspaper articles
- ▶ An article from a scientific journal
- ▶ A real or simulated patient
- ▶ A family tree showing an inherited disorder





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# What about 21 UMAS ?

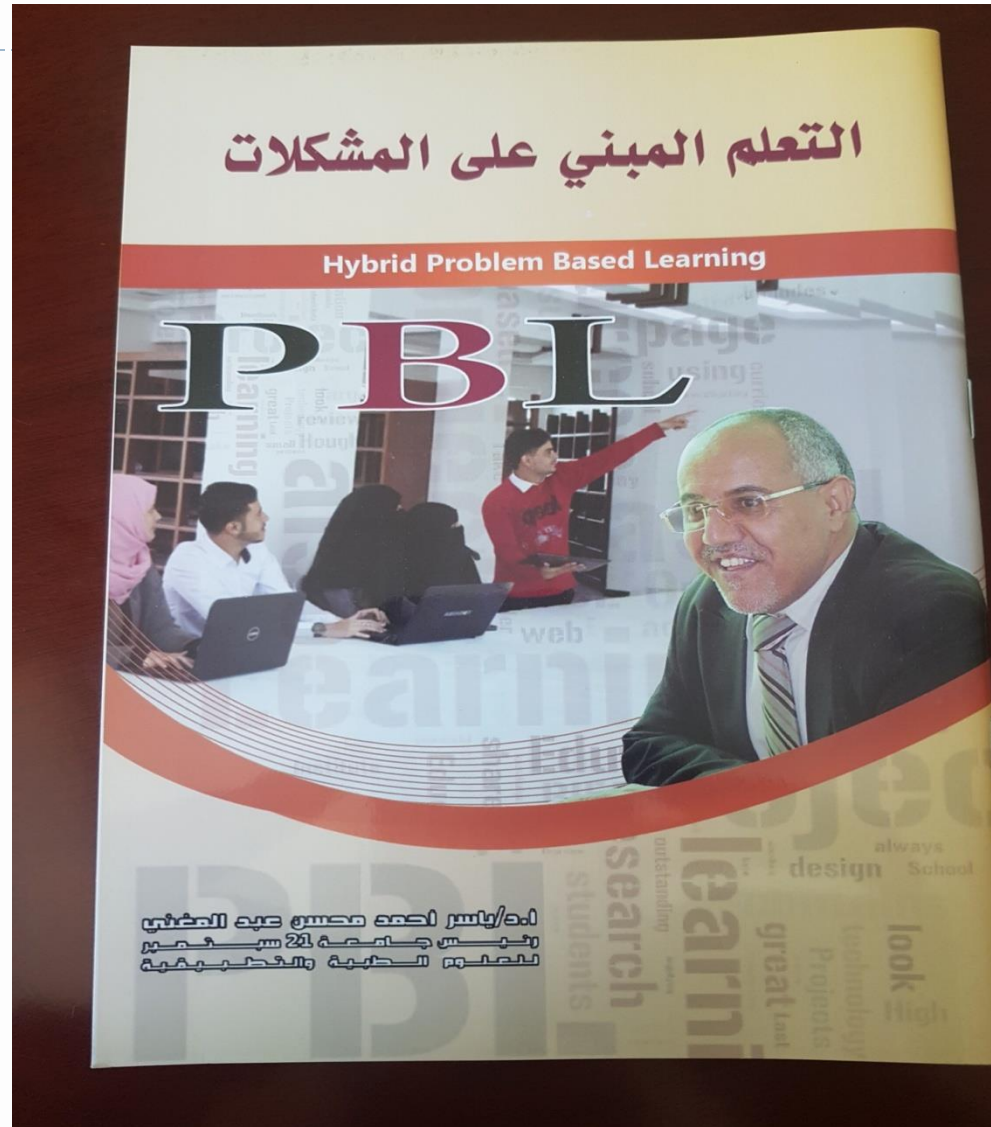
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# Hybrid curricula

In preclinical phase, PBL scenarios are designed and timetabled so as to complement other teaching methods such as:

- ▶ Lectures
- ▶ Practical, other laboratory work
- ▶ Computer-assisted learning
- ▶ E learning, virtual class room and virtual lab

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# FULL TIME AND HYBRID

- ▶ 14 WEEKS : BLOCK 12 WEEKS
- ▶ SCENARIOS IN PARALLEL WITH LECTURES :  
MATCHING CURRICULUM ILOS
- ▶ GROUPING STUDENT ( FOR LECTURES VS PBL)



## المؤتمر السنوي الأول للتقييم الذاتي لمعايير الجودة والاعتماد الأكاديمي

عدد مجموعات PBL	الكلية
54	الطب البشري
18	كلية الصيدلة
12	الطب المخبري
12	كلية التمريض
15	الإدارة الطبية
111	المجموع الكلي

## المؤتمر السنوي الأول للتقييم الذاتي لمعايير الجودة والاعتماد الأكاديمي

A 45-year-old man comes to the emergency department complaining of severe pain on his right flank. There is no evidence of injury. Patient is **a farmer and been working in the yard all day and appears dehydrated.**

The patient describes a **colicky pain** that has a sudden onset localized to the flank area associated with **dysuria** . During the examination, the patient appears extremely restless and unable to find a comfortable position. He is capable of providing a small volume of urine for analysis which **shows blood and amorphous Ca oxalate crystals in** urine.

Ultrasound demonstrates a stone in the left kidney .

Initial treatment and pain management is given and patient transferred to urologist for consultation.

### Tutor guide:

Urine in the renal calyx passes successively through the ureter, bladder, and urethra before exiting the body. Urine movement through the ureter is accomplished by peristalsis of the smooth muscle of the ureter. Kidney stones can become lodged in the ureter especially at the ureteropelvic junction, where the ureters cross the pelvic inlet, and at the ureterovesical junction. Lodging of kidney stones causes significant pain and possibly causes damage to the ureter. Damage to the endothelium of the urinary tract results in the appearance of a small number of red blood cells in the urine called microscopic hematuria. The associated pain likely underlies the elevation in blood pressure and heart rate shown by the patient .

Fluid balance within the body requires adjusting accumulation, through ingestion and metabolism against elimination in the urine, feces, breath, skin and sweat. Excessive sweating in the absence of additional water ingestion results in dehydration, characterized by a decrease in both the extracellular and cell water stores result in decrease in urine volume and concentrated urine.

One unintended consequence of the production of highly concentrated urine is the precipitation of salt crystals in renal calyces( formation of renal stone)..

### Scenario objectives:

Primary:

Anatomy of urinary system.

Excretion function of U.S. and it's role in Fluid balance.

Secondary:

Causes , prevention and management of renal stone.



القناة التعليمية

جامعة 21 علوم التكنولوجيا والتكنولوجيا



# التقييم الإلكتروني لمنهجية التعلم المبني على المشكلات PBL

## المؤتمر السنوي الأول للتقييم الذاتي لمعايير الجودة والاعتماد الأكاديمي

اداء المدرسين	ضعيف	مقبول	جيد	ممتاز
	20	81	294	287
	0.041493776	0.168049793	0.402489627	0.387966805
PBL ال	ضعيف	مقبول	جيد	ممتاز
فصول ال	37	83	297	265
	0.076763485	0.17219917	0.408713693	0.342323651
وضوح السيتاريوهات	ضعيف	مقبول	جيد	ممتاز
	23	76	299	284
	0.047717842	0.157676349	0.412863071	0.381742739
توزيع المجموعات	ضعيف	مقبول	جيد	ممتاز
	39	68	248	327
	0.080912863	0.141078838	0.307053942	0.470954357
اوقات اليرتامج	ضعيف	مقبول	جيد	ممتاز
	77	103	290	212
	0.159751037	0.213692946	0.394190871	0.232365145
مطابقة السيتاريوهات لمخرجات التعليم	ضعيف	مقبول	جيد	ممتاز
	19	52	283	326
	0.039583333	0.108333333	0.38125	0.470833333
سهولة الوصول لمخرجات التعليم المطلوبة	ضعيف	مقبول	جيد	ممتاز
	14	52	307	309
	0.029045643	0.107883817	0.429460581	0.433609959
PBL ال	ضعيف	مقبول	جيد	ممتاز
رأيك في يرتامج ال	4	17	160	501
	0.008298755	0.03526971	0.124481328	0.831950207

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# Problem Based Learning (PBL)

One of the investors set up a medical hospital in order to obtain a medical staff at the lowest cost. He got doctors who had two conditions:

1 – Getting a monthly salary estimated 10 thousand riyals to get a monthly allowance fixed 10% of the salary of the first month or basic until the salary reaches 150 thousand riyals and then become fixed and the duration of the contract not less than 10 years.

2 - Getting a monthly salary of 10 thousand riyals and a fixed rate of 5% over the ten years. They asked the manager to respond within ten minutes. The manager contacted one of his colleagues Management from the college of Medical Management to help him and he told him to use the sequences for the best option

(Required : Director's response within 10 minutes)



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### PBL leads to

- ▶ Improvement in student attitude and clinical performance (Vernon and Blake, 1993)
- ▶ Deeper approach to learning (Newble and Clarke, 1986)
- ▶ Better interpersonal skills and attitudes towards patients (Nandi et al., 2000)