

**Problem-based learning at the
Libyan International Medical University**

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Foreword

Education is the gateway to the future...

Our world is witnessing unprecedented scientific developments that could not have been expected neither in their speed nor in their content. In that context, it has become difficult to remain competitive unless proper emphasis is made on human resource development and meeting future requirements in the form of life-long learning, mastering modern technology and entering the digital age.

Importance is placed upon the quality of the education process as well as improving analysis and critiquing skills and creativity. This is achieved by adopting modern, reliable teaching methods that focus on the student as well as setting up a realistic self-directed learning strategy.

Our focus on self-directed learning and problem based learning is not done with the intent to mimic others but rather as a necessity to survive in this modern age and meet future needs and challenges.

We all deserve to be a part of the future...

Dr. Mohammed Saad Ambarek

President of the Libyan International Medical University

Introduction

Human nature drives man to exert all possible efforts to explore what is going on in their surroundings as well as within their own bodies. To attain such a goal, humans instinctively resorted to different methods, the simplest among them being trial and error. As man evolved, he became aware of different methods of learning that were less tiresome and much more effective.

Psychologists carried out a great deal of research on animals and subsequently humans to study the way that the mind interacts with new data, starting from information reception (through the senses) to their saving, storage, renewal and recall when needed. Moreover, they also focused on the mechanism through which this new data was integrated with previous knowledge.

From the ancient times, the student played a passive, receptive role whereas the teacher would be a transmitter of knowledge. This was the main premise of the classical or traditional system.

This system revolved around the teacher and therefore the student had to be completely passive and never discuss or critique the information that would be presented to him on a golden platter. Subsequently, this produced batches of students who were incapable of self-directed learning and who didn't really want to continue learning. Also, it produced rigid minds that could not deal with any scientific problem that they faced in a real life situation (unless they had already studied it during their student years). Such a system further promoted rote memorization of a massive amount of information, much of which would not be used by the student and ultimately forgotten.

Scientists such as Barrow, Vygotsky and Dewey contributed to change and advance the concepts of how to teach and how to learn.

It is a well established fact that children have a different learning mechanism from adults in which the former has the ability to memorize a massive amount of data whereas the latter does not. In addition, children use their innate talent at mimicry to learn.

It would be completely erroneous to assume that children do not use analysis in their learning, but the percentage used would be much less than that of adults and it would require more time and energy. Lastly, children are unique with the great curiosity that may, at times, seem immature to a grown-up.

As for adults, they rely more on the ability to analyze data, deduce the results and then use these results to solve the presenting problem or challenge. However, such ability needs to be nourished during childhood for it to be of use.

As obvious as the aforementioned principles might seem, it is strange that they have been largely ignored throughout history and methods depending on memorization and recall have become the norm.

It is our pride to state that the Arab sociologist “Ibn Khaldoun” observed all of this and proposed a system very similar to the one that we will mention later regarding the modern methods of teaching and learning.

Focusing on memorization leads to rigidity of thought and might be considered a waste of time and effort and will produce in the long terms generations incapable of development and dealing with unfamiliar challenges. A system that worked to some extent in the past would not necessarily be appropriate for the present and it would be dangerous to create people unable to adapt, keep up with scientific development and innovate.

Traditional Education System

The **traditional education system** depends on what is called “superficial learning”, i.e. stuffing the student’s short term memory with massive information. This system does not allow the student to process and utilize the data by solving problems in order to gain accumulative experience and hence store the information in the long term memory. For that reason, a discrepancy can be observed between the data which has been taught to the student and the means in which they interact with real societal and community needs.

Some of the main flaws of the traditional system are that the students are not brought into the discussion actively and they are not made the focus of the educational process. In addition, students are fed unimportant, redundant topics with little, if any, integration between the various subjects. Students are not prepared to be self-reliant after graduation and that explains the difficulty they generally face implementing the information they learnt into real life.

Features of Problem Based Learning (PBL)

Problem based learning aims to have the student realize that they lack information in certain topics that are required to solve the problem. This serves as a starting point to an active learning process that is motivated by learning those unknown topics and being able to implement it later on.



PBL allows the student to study a topic presented during a problem from within the different disciplines and integrate them. This collection of integrated knowledge and experience grants the student the ability to deal with a similar problem in the future, either during an evaluation or during their professional career.

The educational values of PBL are:

- Integration between the various medical sciences.
- Self-directed learning.
- Teamwork.

In the problem based learning system, the student gains a number of important skills:

- Problem solving skills.
- Clinical reasoning.
- Self-directed learning.
- Self-evaluation.
- Communication skills.
- Teamwork abilities.
- Medical ethics and running medical meetings and discussions.
- Sharing information with others and respecting team members.

The students search for the information, analyze it and eliminate the irrelevant data thereby increasing their cognitive aptitude in addition to their repertoire of knowledge and skills.

One of the advantages of the PBL system is the increased emphasis on the role of the students since they are the ones who determine the learning objectives for the case whereas the teacher serves more as a guide. This allows the students to take on the responsibilities of their own education and cater it to their own requirements.

Problem based learning in history

Human learning through facing problems is considered to be natural. It helped the ancient humans to cope with the environment and explore it by instinctively determining their needs and subsequently taking different paths to meet them. The experience gained would be reused when a similar problem was encountered.

With the evolution of human civilization, man began to refine this system, such as when they would become involved in a particular career; they would try to emulate another craftsman and benefit from their experience in the problems that were faced. Another example of human emulation would be the manner through which we learn to pronounce and speak.

However, with the passage of time, the tides shifted away from the natural human method of learning. Rather than learning principles through need, teachers taught students what they assumed was required to know, thereby leaving the student in a passive recipient state. Massive

amounts of data were poured into student, whether they were able to process it or not. The presentation of information may not match the student's inclinations or needs leading to a waste of time and energy with little benefit.

Since the early twentieth century, the well renowned scientist Flexner, called for education to include three main focuses, namely "**Learning, Research and Providing Service.**" This system would emphasize the three aspects that cover any successful learning process which are, activeness of the student in reaching their needs, explaining phenomena and learning through practice (under the guidance of a teacher).

In the 1950's, Bloom determined three more focuses that had to be incorporated; *knowledge, skills and behavior*. Through each of these focuses, there were special emphases placed that called for higher levels of thinking.

At the end of the 1960's and the start of the 1990's, problem based learning was introduced in medical education. In the face of the decreasing role of students in education, this system was brought about and it stirred quite a bit of controversy. McMaster University in Canada first adopted this system and it soon caught on all over the world.

For that reason, self-directed learning and problem based learning were designed to develop the information and skills necessary to practice medicine. Numerous studies have shown that these systems draw out the latent interest in the topics.

Moreover, when compared to the traditional system, it was found to be more gratifying and enjoyable for students and teachers alike. Additionally, it was rated higher in terms of student mood, educational variables, teaching staff and overall benefit.

Problem based learning in the health field

Problem based learning:

- **Develops** the skills and abilities required to solve the problems faced by stakeholders of the educational process whether in the class or in practice.
- **Matches** medical education specifically because the practice of medicine primarily involves solving cases that require the recall of appropriate information and skills in order to understand, analyze and ultimately solve the problem.
- **Fits** into the daily practice in medicine that is based upon:
 - **Helping the patient** solve his/her health problem.
 - **Using knowledge, skills and ability** to reach an appropriate diagnosis.
 - **Choosing suitable treatments** for each individual patient within the framework of **Ethics** that are acceptable in that society.

In practice, problem based learning (as the name suggests) is based primarily upon problems and in addition other means of teaching such as lectures, seminars, research or consultations. Therefore the unit of learning in this system is the "educational problem" that was composed

with a specific set of objectives in mind. All related educational activities contribute towards reaching a solution to the case.

Description of the PBL program

The **PBL system** is divided into years then into blocks and finally into weeks. Each week is shaped by the problem that a group of students are presented with, either in a written or audio/visual format. They then discuss it amongst themselves in order to reach a number of objectives that were set in advance.

PBL requires small learning groups, so the students are divided into groups that do not exceed ten. A student is appointed as a "Leader" to moderate the discussion and another as a "Scribe" to record the points covered in the discussion.



The "Educational Problem" acts as motivation for gaining the required knowledge to solve the problem. The student is given the opportunity to develop their organized scientific thought process that will allow them to come to a conclusion in the case.

Each class is appointed a "Class Facilitator" from the teaching staff trained for these sessions. Key characteristics of class facilitators include:

- Knowledge regarding the objectives of the curriculum in general and the case in particular.
- The ability to facilitate and motivate the students towards self-directed learning.
- The ability to manage the session as a *facilitator* and not a *teacher*.
- Awareness of the group dynamics and the ability to handle different personalities of students and direct some towards a more positive attitude.

The class meets twice a week, first to discuss the problem (*Brainstorming*) and the other to draw a concept map which would explain the events that occurred in the case using their new repertoire of knowledge that was gained across the week (*Debriefing*). Additionally, students present the information that they obtained from various sources (i.e. the library, conferences, lectures etc).

The number of traditional lectures is kept to a minimum in this system since it causes the students to become passive. They are replaced by a higher quality of lectures that are based on the objectives set in the form of dialogues either in the class or the seminars. This system makes the student an active participant in the discussion.

The students are evaluated on a number of aspects including their participation in the discussions, their retention and ability to use knowledge , attitudes etc.

Goals of problem based learning

This can be summarized into three major goals:

- 1- Attaining **integrated knowledge** from the various domains of the medical sciences. This requires that the subjects are not taught separately but rather as an educational scenario that the student may face in his daily practice. This fits with the notion that the patient comes to the doctor and requires integrated knowledge in all fields since he must consider relevant symptoms and rule out irrelevant ones at the same time.
- 2- The ability to attain, harness and utilize large amounts of information in order to solve problems faced in the daily professional life.
- 3- Developing a student's ability to think in a systematic manner in order to solve problems.

The main focuses of PBL

Problem based learning is considered ideal for self-directed learning which focuses on three points:

- 1- Awareness of the need for information
- 2- Determining the content required to meet the educational objectives
- 3- Selecting and utilizing appropriate references to acquire relevant data.

Self directed learning is not considered to be effective until the student has been able to obtain the required content, consolidate it and then use it at a later time.

Educational strategy of the Libyan International Medical University

The **Libyan International Medical University**, the first private medical university in Libya, **decided to adopt** this new method of teaching and learning and **implemented it in the 2009/2010 academic year**. This strategy will be able to provide an excellent environment and will also achieve the following goals:

- 1- Produce highly trained medical professionals who are able to integrate clinical sciences with behavioral and social sciences and have an awareness of the needs of the people and the societal needs at the national, regional and international levels.
- 2- Reinforce the individual traits and integrity of each student.

- 3- Preparing students to acquire and implement new information and skills as well as allowing them to adapt to the constantly changing conditions in their career.
- 4- To produce graduates with the ability to contribute to scientific development and maintain a high level of multi-faceted clinical skills.
- 5- To produce students capable of life-long learning and leadership as well as possessing good communication skills with others.
- 6- To reinforce and develop active clinical thinking, critical evaluation and decision making.
- 7- Hosting educational programs that open the horizon to possible job opportunities in public health, research or in a clinical setting.
- 8- Develop skills and abilities through continuous training programs and human resources development programs for staff members, employees or other healthcare professionals.
- 9- Providing services and consultation to healthcare providers.
- 10- To function as a distinguished centre for problem based learning.
- 11- To function as a distinguished centre for scientific research and human development.
- 12- Attracting Libyan professionals abroad and linking them to the university and the society.
- 13- To form scientific agreements with respected international universities and institutes and make use of relevant international organizations.

The proposed curriculum at LIMU aims to overcome many of the flaws in the traditional systems. This curriculum was developed through close study of numerous local, regional and international curriculums while taking into account the following principles:

- 1- Integrity in professional practice.
- 2- Commitment to innovation and distinction.
- 3- Life-long self-directed learning and critical thinking.
- 4- Adopting the values of social justice, equality, diversity and professionalism.
- 5- Partnership with all relevant parties
- 6- Cooperation under the banner of diversity of specialties.
- 7- Mutual respect and working with a team spirit.
- 8- Accountability and transparency between scientific parties and the general public.
- 9- Responding to the healthcare needs on a local, national and international scale.

Target features for graduates of LIMU

Through the implementation of this strategy, LIMU aims for its graduates to be:

- **Caregivers** who possess principles and high moral values and are capable of respecting cultural differences.
- **Critical thinkers** capable of assessing available information, techniques and other data in order to solve the problem.
- **Information managers** who recognize the limitations of the technology available and are able to harness it to solve the problem.

- **Problem solvers** able to efficiently and actively use clinical reasoning to solve problems related to the patient and the medical society.
- **Leaders** who can operate under a multi-professional and multi-disciplinary environment spanning all fields pertinent to health.
- **Communicators** able to interact with people and groups in order to promote a healthy lifestyle.
- **Counselors** capable of dealing sensitively with patients in order to help them reach a decision.
- **Life-long learners** able to attain and update their knowledge and skills.
- **Researchers** who can contribute effectively and creatively in national health research projects.
- **Trainers** to guide their colleagues in the medical team.

Closing Statement

From the aforementioned information, the following can be deduced:

- **The importance of implementing this strategy** as well as the necessity to continuously update the curriculum and the system of education in order to improve the quality of education and therefore the quality of graduates.
- **The importance of providing an appropriate environment** such that it may nurture learning and creativity as well as continuously striving towards developing them. Traditional methods of teaching are the reason behind the current aversion to learning and the overly rapid progression of recent graduates to the workforce in small marginal jobs that do not meet the requirements of a modern life.

For that reason, the Libyan International Medical University adopted the problem based learning (PBL) system, in order to achieve its mission:

- **Producing high quality medical professionals in various medical fields who can cope with the community needs.**
- **Adopting life-long educational strategies and dealing with medical problems.**
- **Meeting the national needs in scientific medical research and to establish professional development programs.**

May the University be at the forefront of the regional universities that meet the international criteria for quality and competitiveness.....the university's vision.

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