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PROBLEM BASED MEDICAL EDUCATION

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Problem Based Learning (PBL) -A Rich Environment For Active Learning

-K.R. Sethuraman,

In today's complex healthcare scenario, simply knowing how to use tools and knowledge in a single domain is not sufficient to remain competitive. People must also learn to apply tools and knowledge in new domains and different situations. Specialists report that people at every organizational level must be creative and flexible problem solvers. This requires the ability to apply experience and knowledge to address novel problems. Consequently, learning to think critically, to analyze and synthesize information to solve technical, social, economic, political, and scientific problems, and to work productively in groups are crucial skills for successful and fulfilling participation in our modern, competitive society.

Modern educators should provide learning activities that, instead of merely transferring knowledge to students, engage students in a process of understanding based on their experiences and authentic interactions with the real world of healthcare.

Advocates of a holistic approach to education believe that the process of knowledge acquisition is "firmly embedded in the social and emotional context in which learning takes place."

Problem Based Learning (PBL)

PBL is "the learning that results from the process of working toward the understanding or resolution of a problem."

PBL is based on the assumption that knowledge arises from work with an authentic problem.

PBL reflects the attribute that *knowledge is constructed rather than received*.

PBL found initial acceptance in the medical field and has grown to become a major learning system for a number of medical,

law, and business schools.

It is also being adapted for use in secondary schools and corporate training environments.

Benor (1984) states that Problem-based learning in the context of medical education means self-directed study by learners who seek out information pertinent to either a real-life or a simulated problem. The students have to understand the problem to the extent that its constituents can be identified and defined. The learners have then to "collect, integrate, synthesize and apply this information to the given problem, using strategies that will yield a solution."

The five main attributes of PBL that support the goals of constructivism:

- (1) Student responsibility and initiative
- (2) Generative learning activities,
- (3) Authentic learning contexts,
- (4) Authentic assessment strategies, and
- (5) Cooperative support.

Each attribute builds upon and uses the others. The characteristics are symbiotic, with one feature both supporting and needing the others to create a successful rich environment for active learning.

How does PBL work?

PBL is the epitome of constructive learning process. Savery and Duffy describe five characteristics of PBL.

First, PBL environments include the learning goals of realistic problem-solving behavior, self-directed learning, content knowledge acquisition, and the development of metacognitive skills.

Second, PBL is based on problems that are generated because they raise relevant concepts and principles that are authentic. Problems must be authentic because it is difficult to create artificial problems that maintain the complexity and dimensions of actual problems. Realistic problems also have a motivational effect. They tend to engage learners more because they want to know the outcome of the problem. When the learning context is similar to the situation in which the learning is to be applied, learning transfer is more likely to occur.

Third, the actual presentation of the problem is a critical component of PBL. Problems are encountered before any preparation or study has occurred. The problem must be presented in a realistic way that encourages students to adopt and take ownership for the problem. Work on the problem begins with activating prior knowledge to enable students understand the structure of the new information. Learners state what they already know about the problem domain. They use that knowledge to form hypotheses or ideas about potential solutions. Students must make their own decisions about what is critical because that is cognitively authentic - it reflects actual job performance.

Fourth, the facilitator has a crucial role comparable to the roles described in anchored instruction and reciprocal teaching. The facilitator interacts with the students at a metacognitive level, helping them ask the right questions and monitor their own progress. Facilitators avoid expressing opinion, giving information, or leading to a correct answer. Their role is to challenge the students, and help them reflect on what they are learning. They should not give out the solutions but help them find it - recall the Chinese axiom on giving a fish (solves hunger once) versus teaching fishing (solves hunger forever).

Fifth, cooperative learning is a critical component of PBL for it is used from the beginning through the end of the problem solution process. The group listens to the problem

presentation together. They analyze the problem's components, recall what they know, hypothesize, consider possible resources, and choose directions to go. They test and help each other. They work together on the solutions and reach consensus on final actions. The entire process from beginning to end is cooperative.

Problem discussion also increases motivation by gaining and maintaining student interest (attention), by relating the learning to student needs or helping students to meet personal goals (relevance), by providing conditions conducive to student success (confidence), and through the motivation provided by that mastery of the task(s) (satisfaction).

To sum up, the times have changed. Professionals now need to be able to flexibly and creatively think, solve problems, and make decisions within complex, ill-structured environments. Given these changes, our assumptions on learning and education are out-dated, forcing us to modify our current views of learning. These new assumptions, supported by the theories of constructivism, require different instructional methods, techniques, and strategies than have been conventionally used in classroom settings. Problem based environment for active learning provide a way for us to address these new assumptions in order to meet the educational demands of a changing society.

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**A STUDY OF SMALL GROUP DISCUSSION AS
A TEACHING LEARNING METHOD IN COMMUNITY MEDICINE
Dr. C. Usha Rani,**

AIMS AND OBJECTIVES

- ⇒ To get the students involved in active learning process.
- ⇒ To give them scope for interaction and improve their communication skills
- ⇒ To develop rapport between them and teacher
- ⇒ To develop their self confidence

MATERIALS AND METHODS

- ⇒ Study was taken up on a batch of 19 students. First the students were subjected to learning preference inventory and following has been derived
 - 60% of them showed preference for concrete concepts and teacher structured teaching learning methods
 - 40% of them was for self-directed learning while
 - 53.87% preferred group discussion
 - ⇒ The students were oriented to the theory and practice of small group discussion. These sessions were carried out duration September 1999 to December 1999
 - 30 lecture hours were utilized for this method
 - Time between 2 pm to 4 pm
 - Each was a 2 hour activity
 - In all 15 sessions were held.
 - ⇒ The group was made to sit in a circle on a predetermined topic. A junior teacher acted as a facilitator
 - Each group had a problem to solve
 - A decision to take
 - And to propose a plan of action
 - Analyze various aspects of the topic
 - ⇒ After the 2 hour session the group dispersed with a list of self-evolved questions and returned the next week for further discussion
- The topics so discussed were
- Identify common medical, social and economic problems leading to ill health
 - Environmental Health

- ESI act
- Anti Malaria Control Programme
- Air Pollution

RESULTS

The students responses are tabulated below:

Response	Total No. of students n = 19	Percentage
• Active / lively/ meaningful	18	95%
• Communication skills	15	79%
• Increased rapport with teachers	13	68%
• Interactive & involvement of students	13	68%
• Waste of time	6	32%
• Slow process	15	79%
• Increased self-confidence	12	63%

- 6 students (31.6%) felt it was a waste of time as they could not participated due to domination by others
- 15 students (78.94%) felt it was a slow process but helped them think and free to give their views
- 12 students (63.15%) felt that the whole course should be of similar type as it increased their confidence in the are learnt

Problems noted by teachers:

Time Consuming
Difficult to ensure equal participation by all
At times feeding them with information is short-circuiting the learning process

DISCUSSION

As quoted by Gelula most adults learn more efficiently and retain longer when they engage in active learning

The teacher here acts as a facilitator: hence the teacher should be good at group process than the content

It is better to keep the dominating students in front and silent spectator on your side for a more effective group discussion.

A similar study by Kieffner & Dadlin (1997) found that students increased their self esteem and developed more positive attitude towards learning

To sum up, this exercise brought about self learning abilities, increased confidence in the subject and incidentally, the whole batch passed all the three subject i.e. ENT, Ophthalmology and Community Medicine in their first attempt.

(This paper has been presented by the author at the 28th National Conference of Indian Association of Social and Preventive Medicine (IAPSM) held at Hyderabad during February 9-11, 2002)

**BEHAVIORAL STRATEGIES FOR MEDICAL STUDENTS
PHASE II REPORT
Dr.K.R. Indirakumari
Dr.V.V. Unnikrishnan**

The Department of Physiology, Medical college, Trissur conducted the Second Phase of Behavioral Strategies for Medical Students on 04.07.2002 at the Medical College Auditorium. This was designed afresh, taking into account the feedback and suggestions obtained from the observers and delegates of Behavioral Strategies for Medical Students—Phase I, conducted for the First Semester MBBS students earlier.

Aim of the programme was to create awareness in the 3rd Semester Medical Students about the behavioral modifications which can be adopted to benefit in their personal, academic, professional and interpersonal activities.

82 students attended the program. The PTA, Medical College, Thrissur sponsored the program. The Alumni Association, Medical College, Thrissur provided technical and logistic support.

The Vice Principal, Dr.Bagavathy Ammai inaugurated the programme at 9 AM. A Pre Test was conducted and a Pre-Programme Egogram was taken. The programme consisting the lectures, role-plays, group discussions and buzz sessions followed this. The basic principles of Transactional Analysis were discussed along with some practical applications. Film clippings were used to highlight relevant points. A session on Relaxation was also included. This was followed by interactive session, Post-programme Egogram, feedback and evaluation. Lunch and snacks were provided.

It is practically difficult to evaluate the success of a programme on behavioral modification objectively by any single test. However, this was

overcome to some extent by evaluating whether there was a change in the "Adult" ego state of the individual as determined by the score in the pre and post programme Egograms.

A positive change (an improvement in the 'Adult' score) was noted in 91% of participants. The score was unchanged in 8% and a decrease was noted in 1%. However, the latter two groups showed improvement in the 'Nurturing Parent' ego state, which is considered a good quality for a practicing Doctor. The feedback obtained about the programme from the participants is tabulated below.

Parameter	Excellent	Very good	Acceptable	Poor	Total No. of Responses
Content	45	46	9	0	76
Clarity of Concepts	36	47	17	0	76
Teaching Methodology	39	49	12	0	76
AV Aids	58	35	7	0	76
Relevance to Medical Students	Yes 99%	No 1%	Attainment of objectives	Yes 96%	No 1%
	Total Responses 72			Total Responses 69	

(Note: The variation in total Number of responses is due to either non-submission of feedback or because some columns of the feedback questionnaire were left blank)

The Organizers thank the Principal, the PTA and the TMCAA for the valuable support provided for this initiative.

INTERNATIONAL CONFERENCE ON CURRICULUM CHANGE—COLOMBO

Dr. Nalini Annaswami

The International conference on Curriculum Change in Medical Schools was organized at Colombo, Sri Lanka by the Faculty of Medicine, University of Colombo from 30.06.2002 to 03.07.2002. I had the opportunity to participate and present two papers. Participants from Manipal (India), Bangladesh and Pakistan attended the conference. The International Faculty included Dr. Margery Davis from Dundee, Dr. David J. Johnston from Hong Kong, Prof. Amnon Carmi from Israel, Prof. Hossam Hamdy from Bahrain besides Dr. Raja Bandaranayake, Dr. Palitha Abeykoon and Dr. Jayawickramaraja.

The focus was on the experiences of Colombo Medical Faculty on Curriculum Changes introduced for the batch of students who entered the medical school in the year 1995. The Colombo Medical School is more than 130 years old. The old Curriculum was almost a direct transposition of the British System and the G.M.C. had an indirect influence on the medical curriculum. After the G.M.C. directions regarding reforms in medical education there was an impetus for change in Colombo Medical Faculty.

In the new curriculum the organization structure is in the form of four parallel streams:

1. Basic and Applied Sciences Stream (BAS)
2. Clinical Sciences Stream (CSS)
3. Community Stream (Comm. S)
4. Behavioral Sciences Stream (BSS)

In the Basic and Applied Sciences Stream Modular teaching integrating various disciplines is adopted. The clinical Sciences Stream starts with an introductory programme beginning in the second term of the 1st year itself and the student acquires knowledge and skills which will facilitate learning from the clinical rotations. Skills laboratory helps students to practice skills. This is followed by First Contact Clinical Programme when the student is posted to Accident Service, Family Practitioner, District Hospital, Municipal Dispensary etc. The clinical rotation gives the opportunity to learn about tertiary care. The Community Stream through the entire duration of the course.

A new feature is the Behavioral Science Stream (BSS) extending throughout the course. It has modules on personal development, ethics, communications, skills etc.

Innovate Teaching / Learning Methods such as PBL and SGD, CAL, Skills Lab., Fixed Learning Module (FiLM), Community Attachment Programme and Elective Programme have been introduced. In the Elective Programme student conduct research in a specific area of their choice and submit the report. Overseas elective can also be taken up.

Assessment: Emphasis is on continuous assessment and Objective Structure examinations are conducted.

The first batch of students have graduated from the new curriculum. During the third day of the conference an internist, a final year student presented their views on the new curriculum. It was evident from their confidence and capacity that small group discussions and other newer Teaching/Learning strategies can be instrumental in moulding the personality of medical students.

The Other informative Plenary Session included those PBL by Dr. P.T. Jayawickramaraja, Dundee Spiral Curriculum by Margery Davis, Teaching of medical ethics by Prof. Amnon Carmi, Social Accountability of Medical Schools by Dr. Palitha Abeykoon, Best Evidence Medical Education by Prof. Hossam Hamdy and Quality Assurance and Accreditation by Prof. Raja Bandaranayake.

There were free papers and poster sessions on various curriculum reforms by the participants.

Workshops on BPL, MCQ and CAL were conducted and visits to Family Practice Center and Community Center were organized.

On the whole the Conference was well organized and highlighted the fact that **reforms in curricula are possible in traditional Medical College.**

MODULAR TEACHING FOR M.B.B.S. STUDENTS PRINCIPLES & DESIGN

Dr. S. Mahadevan

Introduction:

Medical College curricula are becoming educationally more sophisticated. The cornerstone of changing educational scene in medical institutions is the inter relationship of theory and practice. Modular teaching embeds a teaching innovation in medical environment. This article outlines the principles and design of modular teaching relevant to medical students.

Background:

The Concept of Modular teaching originated from the world of computer scientists. In mid 1970s computer scientists developed the philosophy of "Modular Programming". Instead of one large program, they wrote small pieces of programs called 'modules'. Modules were combined to give desired functionality. In educational parlance, 'module' is the term used to describe a period of teaching and learning devoted to learning a topic or skills. The modules are divided into units. Instead of preparing 'one big lesson' as in traditional teaching, modular teaching has many units ('Mini-lessons') which are easier to modify and teach. The manner of teaching and learning rather than the content distinguishes 'modular' from 'conventional' teaching.

Aims:

The Principal aims of modular teaching are to develop

- a) knowledge and understanding
- b) critical thinking & problem solving
- c) core skills and personal attributes in the medical student

Design of a Module:

A module is selected according to the students' needs. The broad components of a module are:

- **Units**
- **Activity**
- **Resources**

Units:

A unit enables the teacher to combine practical clinical / lab experience with taught

concepts. It is useful to conceive units for a particular module as Core—Compulsory unit and optional units. They may be either *skill-based* units which will *provide hands-on experience* or problems based units which will improve the proficiency in problems solving.

Modular approach emphasises more on "Doing" than "Knowing".

Talking and reflecting about clinical experience help maintain empathy among students. This is a tacit way of "Attitude Building" in medical students.

While designing the units of a module, autonomous learning is encouraged by making explicit and transparent, the intended learning outcome.

Activity:

Any planned activity must engage each participant in the learning process. One of the four activities mentioned below can be chosen :

1. Problem-based small group discussion.
2. Self-learning hand outs which demand active student participation.
3. Clinical decision-making skills on real or simulated cases.
4. Demonstrations / peer group teaching / hands-on practice sessions

Resources:

1. Pathology specimens / Instruments
2. Slides / electronic presentation
3. Patients—(real or simulated)
4. Handouts, group exercises and Internet resources.

HOW TO PLAN A MODULE

As a planner, you must go beyond the rigid walls of your own speciality.

• State the objectives

(What do you expect the students to acquire during each unit)

- Be simple and explicit; use observable student centered statements.

• **Teaching & Evaluation Materials**

They must accompany the lesson plan.
(Lot of homework for you!)

- **Suggest a feasible method of teaching**
(Depends on your infrastructural facilities)

Example

A Model Plan for a Module **ON DIARRHEAL DISORDERS**

Unit I	Unit II	Unit III	Unit IV
Recognition of Dehydration 30 mins	Preparation of ORS 30 mins	Case Management 30 mins	Causes of Diarrhea 30 mins

OBJECTIVE	ACTIVITY	RESOURCES
Recognition of Dehydration	Group discussion Filling up Diarrhea case record form	Slides Cases
Preparation of ORS	Preparing & Demonstration	Mothers
Case of Management	Scenario exercises	Handout / Digital presentation
Causes of Diarrhea	Identification of organisms	Microscope culture plates

Conclusion:

Medical Curriculum is becoming more competency—based, with a variety of learning supported by cyberage technologies. We need to strike a balance in our roles as information providers and educational supervisors. Modular teaching is merely a new tool in our hands. Only when we understand its design and utility clearly, it can be an effective teaching / learning activity for our students.

To overcome difficulties is to experience the full delight of existence
- Arthur Schopenhauer. German philosopher, 1788-1860

I'm not afraid of storms, for I'm learning how to sail my ship
Louisa May Alcott. American author known for her children's books, author of the classic Little Women, 1832-1888

Difficulties increase the nearer we approach our goal
- Goethe, Johann Wolfgang von. German poet, novelist, playwright and philosopher, 1749-1832

Everywhere is walking distance if you have the time.
-- Steven Wright

One of the nice things about problems is that a good many of them do not exist except in our imaginations.
-- Steve Allen

Know-How: 10 tips on Setting up small group, self-directed PBL

Dr.K.R. Sethuraman

It's not that I'm so smart, it's just that I stay with problems longer.

- Albert Einstein

Several educators try out problem based learning (PBL) and give up when unexpected problems crop up. Here are some tips to help you succeed where others have given up in frustration.

Here are ten things to do before your first PBL session.

1. Decide how to start.
2. Visualize the timing and the meetings.
3. Organize the student groups.
4. Create the resources.
5. Create the environment for learning.
6. Create the environment for group process skills.
7. Create the environment to develop "expertise" in problem solving.
8. Assess the student's performance.
9. Evaluate the program's effectiveness.
10. Add a personal touch.

Let us consider each in turn.

1. How to start

Do a pilot project. Convert a part of your course into PBL format.

Select a course, prepare a list of topics and subject content.

Convert these into desired objectives and outcomes for your students.

List the fundamental concepts you want the students to learn. Don't be afraid to inte-

grate subject material across disciplines. Students love integration!

Pose the problem that will drive the learning. Look at typical examples you have seen in the past. Select a dozen good examples as problems. Analyze these and see which issues each problem raises for the student. Each "problem" then becomes the focus for the sequence of goals, teaching-learning and feedback.

2. Visualize the timing and the "meetings"

The next issues are:

How much total amount of time should I allow?

How many different types of "meetings" to arrange?

What is the duration and what are the characteristics of each meeting?

How much total time? Experience with PBL suggests that it takes about 20% more time to "cover" the same amount of subject material. As a start, you might look at "covering 50% of the material" in the amount of time you used to spend lecturing. Why so drastic a reduction? As mentioned often, putting people in groups doesn't mean that immediately they become the perfect PBL process group. As groups develop their expertise, more subject content can be "covered."

Plan the number and types of meetings for your students. The basic minimum are **two** meetings - an initial Goals meeting followed by a Teach-learn meeting. Another variation is **three** meeting sequence of Goals, Teach - learn and Feedback The Feedback meeting helps the students realize the quantity and quality of their learning.

As your program evolves, you may want to try the **four** meeting sequence of Goals,

Teach-learn, Consolidate and Feedback.

3. Organize the student groups

Create the groups. The optimum size is 4 to 6 but many options are possible. If the groups are to be tutorless, one can cluster students together who have the same degree of commitment. This helps to overcome the complaints that "not everyone takes equal part in my group."

You may let them choose the groups. Students are then responsible for the decisions they made about group membership.

Decide on the "life" of a group. If you change groups every couple of weeks, the members need not put in the effort to cope with conflicts nor do they try to make the groups work well. They may idle and hope to be in a better group in 2 weeks! About 6 to 12 weeks gives the group members adequate time to evolve through the "Storm, Form, Norm and Perform!" stages of group behaviour.

4. Create the resources

Take an inventory of learning resources. Make adequate copies of the key materials; make your lecture notes and transparencies - or PowerPoint slides- that you intend to use.

5. Create the environment for learning the subject.

The students need to feel comfortable with their learning environment.

They need to feel "in control" and that they will succeed... or at least learn how to succeed.

Since assessment is the most powerful driving force for learning, the assessment must be consistent with the learning objectives selected by the group in the Goals Meeting.

6. Create a conducive environment for group process.

This is perhaps the most important step. This is one area where many teachers err initially and give up in frustration.

Start by drawing on the experience of other teachers to identify the things that commonly go wrong. Then think of options of how you want to handle this.

For example, what if student:

- doesn't attend the meetings?
- continually disrupts the group?
- promises to research and teach a topic and then pleads "can't do it, I have too many other commitments." ?
- really hasn't learned anything but expects to pass?

Empowering student groups is linked with accountability. Students must be accountable for their actions. Since small group, self-directed, self-assessed PBL requires that students use problem solving, interpersonal-group, self-directed, critical thinking skills, why not:

A. Develop two sets of objectives, one for the group process skills and the other for the subject component.

B. Help students develop confidence that they have acquired those skills by assessing them.

C. Spell out the consequences of faulty performance right at the beginning.

D. Try to make the implicit explicit so that all can monitor and see the performance. Use feedback forms that people can fill out about a performance. These forms are given to the "performer" who then must write an objective analysis of the feedback he/she has received.

E. Create a mindset that accepts this - "Without feedback we stagnate. Positive and negative feedback are needed for personal growth." However, students still have many misconceptions about assessment and feedback.

How you set up the course at the beginning dictates how well you will be able to handle empowerment and accountability.

7 Create an environment to develop "expertise"

When we encounter a problem in a subject area where we know little, solving it is indeed a problem. We read and reread the problem statement. We identify the goal. We explore the problem to try to discover what is really pertinent, what is important and what can be neglected. We often work backwards by focusing on the "goal" and trying to see what we need to do to connect the goal to the given information. We try many different things. We make mistakes, several of them and learn by trial and error.

However, once we solve the problem, and encounter a "similar" problem in the future, it is no longer a problem; it is just an exercise in recall. Here we use pattern recognition. We scan the problem statement, recognize a pattern that is similar to what we have experienced (and solved) before. We recall that experience. We work forwards from the given information toward the goal.

The more our expertise develops, the more we encounter exercises, and the less we encounter problems—the "no problem" stage. In using pattern recognition, novices tend to use "similar wording" whereas experts are able to consider the underlying "similar fundamentals."

In PBL, students use primarily one problem to drive the learning for a one to two weeks. They use a problem solving approach. Unless we explicitly add activities, they see few additional sample solutions. Their strategy is to approach each new problem and each new situation as a problem.

Hence, to develop expertise, we need our students to spend time elaborating on those problems that they have solved during PBL.

8. Assess the student's performance

Legitimize the student's effort in developing lifetime learning skills, problem solving and the other process skills by assessing them. The key is to sort out the details of what and how you plan to assess them **before** you have your first meeting with the class.

Then make your plans explicit and public.

9. Evaluate the program's effectiveness

Before your first class, think of ways that you can evaluate the effectiveness of your shift to PBL.

First, decide on your purpose for evaluation. Is it to convince others that PBL is better than the conventional approach to learning? Is it to monitor the student's acquisition /learning of skills and thus set benchmarks for further development? Is it to ensure that some standard of performance is maintained? Are you evaluating the program to help the students see their own personal progress?

Second, select the elements that you plan to evaluate. Do you want to evaluate the program's effectiveness in developing lifetime learning skills? in facilitating the student's learning of subject knowledge? developing the student's problem solving skills? in changing the student's attitudes toward learning so that they take charge of their own learning? or in developing the student's critical thinking skills?

The evaluation instruments should be:

pertinent to the skills you are interested in;

validated so that their results make sense;

ones where we expect a change in the results because of the PBL experience.

Evaluating the program's effectiveness provides you with useful feedback to the students about their growth and development.

10. Nice touches you can add

Select problems in such a way that—

- A. Each student group will be researching similar learning issues.
- B. Each person in the group is researching a different topic.
- C. One person from each group is undoubtedly researching the same topic.

This ensures uniformity, variety and active learning. The groups can share their experi-

ences in consolidation session. This additional consolidation meeting is very helpful to defuse any tendency for students to tear off, deface or hoard the library resources.

Summary

Research highlights the difference between conventional and PBL programs. We use that research to help design more effective PBL programs.

Start simply. Do not be too ambitious.

Visualize the timing and the student meetings. For any problem, students could have between two and five different types of meetings. Start with the three meeting format: goals, teach-learn and feedback meetings.

Organize the student groups. Over time, any way of distributing seems to work.

Create the learning resources. As a start use an annotated list of references.

Create the environment for learning the subject. Ensure that the student's learning objectives resemble your objectives for the problem.

Create the environment to develop the proc-

ess skills. Make explicit the implicit process.

Create the environment to develop expertise. Consider adding an "Elaboration meeting" for each problem.

Assess the student's performance: on both the subject knowledge and the process skills.

Anticipate how to evaluate the program's effectiveness. Select instruments and schedules.

Then, you are ready for your first class. Enjoy!

The Medical Council of India 1997 curriculum has allotted after-noons of 6th and 7th semester for clinical demonstration and integration. This large curricular time can be effectively used for PBL.

References

"Problem-based Learning: helping your students gain the most from PBL" 3rd edition, March 1996 Donald R. Woods

Instructor's Guide for "Problem-based Learning: how to gain the most from PBL" 1996 Donald R. Woods

Some chapters of above two are available online.

RECENT ACTIVITIES OF N.T.T.C.

1. A workshop on 'Nursing Care in Emergency' was conducted from 11.3.2002 to 20.3.2002.
2. An off-site workshop on "Current Concepts in Medical education" was conducted from 13th to 15th March 2002 at KAPV Medical College, Trichy.
3. A workshop on 'Human Relations in Health Care' was conducted from 22.7.2002 to 31.7.2002.
4. First workshop for Training of Trainers has been conducted for the Tamil Nadu Dr. M.G.R. Medical University from 5.8.2002 to 9.8.2002 at JIPMER.
5. P.G. Orientation Programme was conducted from 12.8.2002 to 19.8.2002.
6. An Off-site workshop for Training of Trainers has been conducted for the Tamil Nadu Dr. M.G.R. Medical University from 5.9.2002 to 6.9.2002.
7. A workshop on 'Management Technique for Nursing Administrators' was conducted from 11.9.2002 to 20.9.2002.
8. A tele-conference was conducted on 13.9.2002 between JIPMER and the T. N. Dr.M.G.R. Medical University.
9. An off-site Workshop for Training of Trainers has been conducted at A.I.M.S & R.C., Cochin from 27.9.2002 to 28.9.2002.
10. An off-site Workshop for Training of Trainers for Dental Doctors of the T.N. Dr.M.G.R. Medical University from 31.10.2002 to 2.11.2002.
11. Second Workshop for Training of Trainers for the T.N. Dr.M.G.R. Medical Uni-

- versity was conducted from 11.11.2002 to 16.11.2002 at JIPMER.
12. A Workshop has been conducted on "Educational Technology for Nursing Educators" from 2.12.2002 to 11.12.2002.
 13. Dr. K.R. Sethuraman, and Dr. N. Ananthakrishnan, have participated as faculty in C.M.E. on "New M.C.I. Curriculum and Information Technology" on 19.1.2003 at Vishakapatnam, A.P.
 14. Interns Orientation Programme has been conducted from 28.1.2003 to 30.1.2003.
 15. Two WHO Fellows viz. Dr. Ni Ni Tin and Dr. Aye Aye San from Myanmar have taken training from 27.1.2003 to 21.2.2003 on "Educational Technology"
 16. Dr. K.R. Sethuraman, Dr. C.H. Shashindran, Dr. K.A. Narayan, and Dr. Gita Rajagopalan, have participated as observers for Master Trainers Workshop at the Tamil Nadu Dr. M.G.R. Medical University, Chennai, from 24.2.2003 to 28.2.2003.
 17. Dr. K.R. Sethuraman, Dr. K.A. Narayan, and Dr. Dinkar Pai, have conducted a Workshop on "Hospital Contingency Plan for Management of Mass Casualties" at Port Blair, Andaman & Nicobar Islands from 7th to 8th March 2003.

FORTH COMING ACTIVITIES

1. A Postgraduate Orientation programme on 'Research Methodology - Part II' for III year Postgraduate students has been organised from 21.4.2003 to 28.4.2003
2. Short-term WHO fellowship for faculty from Nepal from 7.7.2003 to 26.7.2003.

ANNOUNCEMENT

We are glad to announce that the National Teacher Training Centre, JIPMER, Pondicherry has been approved by the WHO for short-term fellowship on 'Educational Technology' for teachers from medical and allied colleges (Nursing, Dental, etc.) Educators are encouraged to seek for further information on fellowship from WHO Representative, Nirman Bhavan, New Delhi-1.

WEB LINKS ON PBL

1. <http://meds.queensu.ca/medicine/pbl/pblhome5.htm>
2. http://www.pbl.cqu.edu.au/content/online_resources.htm
3. http://www.oeghd.or.at/zeitschrift/1997h1/07_abs_e.html

WEB SITE ON PROBLEM KNOWLEDGE COUPLING

www.pkc.org (This is very useful site to learn more about the importance of coupling knowledge with problem to overcome the limitations of evidence based medicine)

ATTENTION

The life members of NTTC Alumni Association who have not updated their addresses may not get NTTC Bulletin. Kindly send your current address by mail to Dr. K.R. Sethuraman, Project Officer & H/D of Medical Education, JIPMER, PONDICHERRY-6 or email to : nttc@rediffmail.com or krs@jipmer.edu
Website address: www.jipmer.edu

Spectrum of Problem Based Education (PBE) in a Traditional Curriculum - JIPMER experience

Compiled by NTTC core group; input from Teaching Faculty of JIPMER.

Introduction

Given the realities of third world, adoption of a parallel track PBL curriculum in-toto may not be a feasible option for us. However, within the traditional track, one can always use problem based educational activities to enrich the learning environment for our students to acquire higher levels of cognitive problem solving skills.

Over the years, the teachers at JIPMER have tried out several forms of PBE activities - PBE is deliberately used here to differentiate it from the purist's view of PBL. PBE is feasible in "traditional colleges" whereas PBL needs "innovative schools" that offer parallel track PBL curriculum.

We classify all PBE in to 4 types - Maxi, Midi, Mini and Micro. Maxi is the regular PBL curriculum or a problem based activity that goes on for at least a semester or more. Midi is any PBE that takes 4 hours or more spread over 2 or more days. Mini-PBE takes just a single session to complete. Micro-PBE takes just 5 to 20 minutes and is a part of a lecture or a practical session.

Let us now look at some examples of these starting from the Micro type:

Micro type of PBE

- **Buzz session**

This takes just a few minutes to complete. It is best fitted as a buzz session within a 60-minute lecture class. An easy example - in a lecture on liver function (or jaundice) embed a buzz session on "Diagnosing the type of jaundice" based on the interpretation of liver function tests (LFT). Several LFT reports are circulated to students. It is easy to make buzz groups of 3; in each group. The student in the middle holds the printed slip to buzz on and

the students on either side join in the buzz group discussion for about 2 or 3 minutes. After that, one member of each buzz group tells the class what they had discussed.

An average buzz may take 2 minutes to explain and circulate the problems for buzzing on, 3 minutes of buzzing and about 10 minutes of post-buzz discussion and clarification. With proper planning, it is feasible to conduct a buzz in any lecture of 60 minutes.

There are some advantages of using buzz-sessions as a micro-PBE activity.

- The attention of the students in a lecture drops after about 20 minutes. If the lecturer conducts a buzz at that time, the group becomes highly active and attentive. The lecture then has two didactic parts of about 20 minutes each separated by the interactive and participatory buzz activity.
- Lecturing, being didactic in nature, is not a good method for teaching-learning of problem solving. Buzz as a PBE helps to correct this deficiency of lecture method.
- Lecture is a teacher centred activity. Embedding a buzz session helps to make atleast a part of the lecture hour in to a student-centred participatory activity.

- **Quiz session**

Another interactive way of doing a micro-PBE is to conduct a problem-solving quiz for 5 to 10 minutes. An example: Choosing the appropriate therapy for a given set of problems.

Note: The problems for buzz and quiz have to be relatively simple so that average learners can solve them in a minute or two.

Mini type of PBE

- **Workshop**

Problem solving exercises for a full session form the mini version of PBE. As time avail-

able is one to three hours, complex problems can be taken up as learning exercises. Many of us at JIPMER use workshop format for mini-PBE: an introductory lecture for 10 - 30 minutes, problem solving exercises in small groups for 10 - 30 minutes and a final plenary session for 30 to 90 minutes. Most students like this form of learning experience. Complex and realistic problems are difficult to prepare and use initially. However, once done, these can be recycled every year for a new batch of students. Therefore it is not time consuming, when seen in a mid-range or a long-range perspective.

We have successful sessions on Medical Ethics, Rational use of antibiotics, Rational use of Diagnostic tests etc. For postgraduates, the dept of medicine has conducted PBE workshops on clinical signs and syndromes to foster critical thinking at the bedside among the PG students.

Midi type of PBE

- Modular learning

Higher levels of integrated learning through problem solving activities undertaken over 2 to 5 days form the basis of midi-PBE. Vertical and horizontal integration can be best achieved in learning modules (see *Dr Mahadevan's article in this issue.*) The afternoons of 6th and 7th semester of MBBS course is used at JIPMER for modular teaching-learning. The dean and vari-

ous curriculum committees are responsible for selection, sequencing and time scheduling of these modules. Except for skill based modules (eg., first aid & CPR) and demo based modules (eg., yoga and lifestyle changes), most other modules (eg., diabetes, ECG etc) have problem based learning as a major component. Some educators, who are trained in PBL, even use a similar method - introduction to the problems, learning needs identification, overnight library work and tutor mediated small group learning etc (see the article on 10 tips to).

"Integrated orientation programme on Quality Care for interns" is a midi-PBE that runs for 6 sessions spread over 3 full days. Started in its new format since 1993, this has been quite effective as a PBE. We have a similar PBE module since 1994 for our post-graduates on "Ethics, Research methodology and Scientific presentation."

Maxi type of PBE

This would involve designing and adopting an innovative curriculum, either a full-fledged PBL or a hybrid curriculum e.g., the *SPICES model*. At present, we do not use it.

GREAT NEWS !!! SHARE WITH YOUR FRIENDS

Since the government stopped the grant-in-aid for training on "Educational Science" for teachers, a modified course for 7 days will be organised by this centre. It is tentatively scheduled from 14th September 2003 to 21st September 2003. The participant or sponsoring authority is expected to bear the travel and boarding expenses. Approximate boarding expenses would be Rs.950/- Rooms on sharing basis will be provided at free of cost. The teachers of Council approved Medical and allied colleges like Dental, Nursing, etc. who are desirous to attend the course may contact:

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To

If undelivered please return to

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