Perception of Tutors and Students about PBL Conducted for PPSP and PPSG students

(Report on Short term Grant: 304/PPSP/6131252)

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Semua laporan kemajuan dan laporan akhir yang dikemukakan kepada Bahagian Penyelidikan dan Pembangunan perlu terlebih dahulu disampaikan untuk penelitian dan perakuan Jawatankuasa Penyelidikan di Pusat Pengajian.

USM R&D/JP-04

LAPORAN AKHIR PROJEK PENYELIDIKAN R&D JANGKA PENDEK

A. MAKLUMAT AM

Tajuk Projek: *Perception of tutors and students about PBL conducted for PPSP and PPSG students*

Tajuk Program: Short term grant: 304/PPSP/6131252

Tarikh Mula: 2nd February 2003

Nama Penyelidik Utama: **Prof. Madya Dr. Arunodaya Barman P0526833**
(*berserta No. K/P*)

Nama Penyelidik Lain: **Prof. Rogayah Bt Ja'afar, 550108-01-5500**
(*berserta No. K/P*)

B. PENCAPAIAN PROJEK:

(*Sila tandakan* [/] *pada kotak yang bersesuaian dan terangkan secara ringkas di dalam ruang di bawah ini. Sekiranya perlu, sila gunakan kertas yang berasingan*)

☐ Penemuan asli/peningkatan pengetahuan

Students enjoyed the sessions but they felt that tutors' guidance and contribution in the discussion might make the sessions a better success. They found the sessions are very helpful in acquiring communication and group interaction skills and in-depth understanding of the topics of study. These sessions helped them to relate basic sciences knowledge to the clinical sciences. They felt that use of repeated triggers is not in favour of the principles of PBL. Most tutors have training to conduct the PBL sessions and they enjoy facilitating the sessions. They were in the opinion of that the content of the PBL sessions are related to the objectives of the block, attending PBL sessions help their students to link basic sciences to their clinical appraisal skills, students need to work harder to achieve certain learning objectives through PBL session than through lecture, students in the group did not participate in discussion as expected, time allotted for a PBL

session is enough, classrooms for PBL sessions are reasonably comfortable, learning resources are available to their students and they did not spend major part of their teaching time in PBL. Fifty percent of the respondents felt that the number of students in each group is appropriate to conduct the session. No relation was seen between the personal variables and any one of the opinions of the tutors.

☐ **Rekaan atau perkembangan produk baru,**
(*Sila beri penjelasan/makluman agar mudah dikomputerkan*)

(1) Nil

☐ **Mengembangkan proses atau teknik baru,**
(*Sila beri penjelasan/makluman agar mudah dikomputerkan*)

(1) Nil

(2) _____

(3) _____

☐ **Memperbaiki/meningkatkan produk/proses/teknik yang <u>sedia ada</u>**
(*Sila beri penjelasan/makluman agar mudah dikomputerkan*)

(1) Nil

_____

(2) _____

_____

(3) _____

C. PEMINDAHAN TEKNOLOGI

☐ Berjaya memindahkan teknologi.

Nama Klien:
(*Nyatakan nama penerima pemindahan teknologi ini dan sama ada daripada pihak swasta ataupun sektor awam*)

(1) Nil

(2) _____

(3) _____

☐ Berpotensi untuk pemindahan teknologi.
(*Nyatakan jenis klien yang mungkin berminat*)
Nil

D. KOMERSIALISASI

☐ Berjaya dikomersialkan.

Nama Klien: (1) Nil

(2) _____

(3) _____

☐ Berpotensi untuk dikomersialkan.
(*Nyatakan jenis klien yang mungkin berminat*)

Nil

E. PERKHIDMATAN PERUNDINGAN BERBANGKIT DARIPADA PROJEK
(*Klien dan jenis perundingan*)

(1) Nil

(2) _____

(3) _____

(4) _____

F. PATEN/SIJIL INOVASI UTILITI

(*Nyatakan nombor dan tarikh pendaftaran paten. Sekiranya paten/sijil inovasi utiliti telah dipohon tetapi masih belum didaftarkan, sila berikan nombor dan tarikh fail paten*).

(1) Nil

(2) _____

(3) _____

G. PENERBITAN HASIL DARIPADA PROJEK

(i) LAPORAN/KERTAS PERSIDANGAN ATAU SEMINAR

(1) **Perception of Students about the Problem-based Learning Sessions Conducted for Medical and Dental Schools' Students of Universiti Sains Malaysia (Submitted to Education for Health)**

(2) **PROBLEM-BASED LEARNING AS PERCEIVED BY DENTAL STUDENTS OF SCHOOL OF DENTAL SCIENCES, UNIVERSITY SAINS MALAYSIA. (Abstract accepted for the 9th National Conference on Medical Sciences. Full article is ready to submit for publication)**

(3) **Perception of Tutors about the Problem-based Learning Sessions Conducted for Medical and Dental Schools' Students of Universiti Sains Malaysia (Ready to submit for publication)**

(ii) **PENERBITAN SAINTIFIK**

(1) **Perception of Students about the Problem-based Learning Sessions Conducted for Medical and Dental Schools' Students of Universiti Sains Malaysia (Submitted to Education for Health)**

(2) **PROBLEM-BASED LEARNING AS PERCEIVED BY DENTAL STUDENTS OF SCHOOL OF DENTAL SCIENCES, UNIVERSITY SAINS MALAYSIA. (Abstract accepted for the 9th National Conference on Medical Sciences. Full article is ready to submit for publication)**

(3) **Perception of Tutors about the Problem-based Learning Sessions Conducted for Medical and Dental Schools' Students of Universiti Sains Malaysia (Ready to submit for publication)**

(4)

(5)

(6)

H. **HUBUNGAN DENGAN PENYELIDIK LAIN**
(*sama ada dengan institusi tempatan ataupun di luar negara*)

(1) Nil

(2)

I. SUMBANGAN KEWANGAN DARI PIHAK LUAR

(*Nyatakan nama agensi dan nilai atau peralatan yang telah diberi*)

(1) Nil

(2) _____

(3) _____

J. PELAJAR IJAZAH LANJUTAN

(*Nyatakan jumlah yang telah dilatih di dalam bidang berkaitan dan sama ada diperingkat sarjana atau Ph.D).*

	Nama Pelajar
Sarjana	**Nil**
Ph.D	**Nil**

K. MAKLUMAT LAIN YANG BERKAITAN

_____

_____

_____

_____

_____

_____

13.05.04

Tarikh

Tandatangan

TANDATANGAN PENGERUSI JAWATANKUASA PENYELIDIKAN PUSAT PENGAJIAN

Professor Zabidi Azhar Mohd. Hussin
Chairman of Research & Ethics Committee
School of Medical Sciences
Health Campus
Universiti Sains Malaysia
16150 Kubang Kerian,
KELANTAN, MALAYSIA.

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ABSTRACT

Context: Problem-based learning is one of the teaching learning methods that gives students an opportunity to "learn to learn," by working in groups to seek solutions to real world problems. In spite of the growth and advantages of PBL, there is continuing debate about its effectiveness over the conventional teaching learning methods. In the School of Medical Sciences (SMS) and the School of Dental Sciences (SDS), Universiti Sains Malaysia (USM), the MD and DDS programs are of 5 years duration. Basically the curriculum is problem-based and community oriented.

Methods: Opinions and attitudes of tutors and students about PBL sessions conducted for the students of SMS and SDS were studied by a questionnaire survey.

Results: Students enjoyed the sessions but they felt that tutors' guidance and contribution in the discussion might make the sessions a better success. They found the sessions are very helpful in acquiring communication and group interaction skills and in-depth understanding of the topics of study. These sessions helped them to relate basic sciences knowledge to the clinical sciences. They felt that use of repeated triggers is not in favour of the principles of PBL. Most tutors have training to conduct the PBL sessions and they enjoy facilitating the sessions. They were in the opinion of that the content of the PBL sessions are related to the objectives of the block, attending PBL sessions help their students to link basic sciences to their clinical appraisal skills, students need to work harder to achieve certain learning objectives through PBL session than through lecture, students in the group did not participate in discussion as expected, time allotted for a PBL

session is enough, classrooms for PBL sessions are reasonably comfortable, learning resources are available to their students and they did not spend major part of their teaching time in PBL. Fifty percent of the respondents felt that the number of students in each group is appropriate to conduct the session. No relation was seen between the personal variables and any one of the opinions of the tutors.

Discussion and Conclusion: PBL sessions conducted for the students of SMS and SDS is a successful teaching learning approach. Most tutors and students enjoyed the method. There are however some misconceptions about the method too. Tutors, SMS and SDS students should continue to be briefed on the philosophy, principles and objectives of the PBL as well as their roles in the session.

INTRODUCTION

Education should be aimed at training students how to deal with problems in the future, preparing themselves to become independent, self-directed, lifelong learners. PBL is one of the teaching learning methods that gives students such opportunities. Problem based learning is an instructional method that challenges students to "learn to learn," working cooperatively in groups to seek solutions to real world problems. An approach to learning where the problem comes first and the knowledge is developed as a consequence of trying to solve the problem.

PBL since its implementation in McMaster University in 1969 spread throughout North America and in other parts of the world. There are variations of PBL implemented at institutions like University of New Maxico, Harvard University, the University of Sherbrooke, and Michigan State University (Albanese & Mitchell, 1993). A number of new universities and medical schools have introduced and are trying to introduce PBL in different forms and extent. Students generally enjoy the active participation that the PBL provides. Problem- based learning reduces the traditional barriers between students and teachers and is more convivial for students and tutors (David T. et al.1999). In spite of its growth and advantages, there is continuing debate about its effectiveness over the conventional teaching learning methods. Berkson L (1993) concluded that the graduates of PBL are not distinguishable from their traditional counterparts. The experience of PBL can be stressful for students and faculty and implementation of PBL may be unrealistically costly. There are few studies on attitude and opinion of participating faculty and students on PBL (Vernon, 1995). An innovative method within a group of

tutors and students may show a very good result but may not be good in others. If there are controversies to be encountered in the implementation of a method, it is worthy to be sensitive to its existence and PBL is not the only method of teaching learning in professional education (Boud D and Feletti G, 1993).

In the School of Medical Sciences (SMS) and the School of Dental Sciences (SDS), Universiti Sains Malaysia (USM), both the MD and DDS programs respectively are 5-year integrated programs. Basically each curriculum is problem-based and community oriented. The full 5-year program is divided into 3 phases.

Phase I- year one: introduces the scientific basis of medical practice with an emphasis on basic level knowledge of normal structure and function of human body. Teaching learning sessions are of traditional lectures, practical and tutorials.

Phase II- year two and three: introduces different health events of human life from birth to old age with reference to integrated knowledge on common diseases. Teaching learning in this phase includes lectures, practical, fixed learning modules, clinical clerkship and problem-based learning sessions.

Phase III- year four and five: intensive clinical experiences through traditional and apprenticeship method of teaching learning.

Dental and medical students learn together right from year 1 to year 3 attend the same lectures, PBL sessions as well as practical classes. A PBL session is of two to three hour duration with a group of 14 to16 students. Tutors from all disciplines (both basic sciences and clinical) act as facilitators for the sessions.

To my knowledge a few informal studies have been carried out in USM on tutors and students perception of or measures of satisfaction with the PBL methodology in teaching and learning.

Objective

To assess the opinion and attitude of tutors and students on PBL conducted for PPSP and PPSG students.

Methodology

Type of study: It is a cross sectional descriptive study.

Study population:

Tutors: All the tutors of PPSP and PPSG who participated in conduction of PBL for their students. A total of 217 tutors (*PPSP-193, PPSG-24)* were the eligible respondents.

Students: Students who completed their second year of the course and participated in PBL were the student respondents. No sampling method was applied to select the respondents. A total of 652 students (*PPSP-183 year 3, 165 year 4, and 194 year 5; PPSG-48 year 3, 32 year 4, and 30 year 5*) were the respondents.

Data collection procedures: A pre-tested questionnaire was sent to all the tutors through internal mail with a request to respond and send it back to the investigators in the department of Medical Education, USM. Response rate was assessed after 10 days and the tutors from whom responses were not received requested by the investigators and the research assistant personally or through their secretaries to respond.

Similarly another pre-tested questionnaire was sent to the students through internal mail. This was done twice due to failure of getting the responses from most of the students. The same questionnaires were distributed to the students during a PBL session and or just at the beginning of lecture classes. Students were asked to fill it up who had not done it before and return the completed questionnaire to the department of medical education or to the research assistant waiting outside the classroom. The responses were anonymous.

Questionnaire:

For tutors- It included questions on personal information of the respondents like the respondents' educational qualifications, field of specialty, experience as tutor of PBL and traditional teaching methods etc.

For students-Year of study, age and sex etc.

Other than background information opinion about different aspect of PBL like student interest and enthusiasm, faculty interest and enthusiasm, personal satisfaction etc were included in the questionnaire for both of these groups of respondents. All these questions were on a Lickert Scale. Some open- ended questions were also included.

Data analysis: Analysis of the collected data were done by using the computer software SPSS.

Outcome: Rethinking in formulation and organization of teaching learning sessions in future.

RESULTS

Out of 215 tutors 166 (77%) responded to the questionnaire sent to them and out of 652 students 476 (73%) responded to the questions.

Most of the student respondents are female (74%) *(Fig. 1)*. Their age ranges from 21 to 26 years *(Fig. 2)*. Majority of students opined that PBL should be started from the beginning of phase two *(Fig. 3)* and is to be continued up to year three *(Fig. 4)*.

Fig. 1

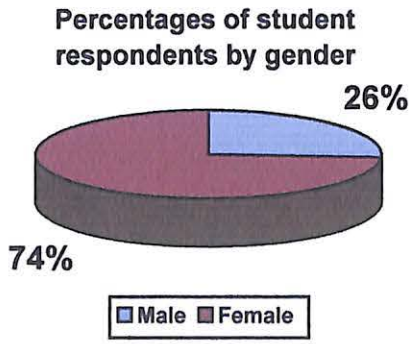


Fig. 2

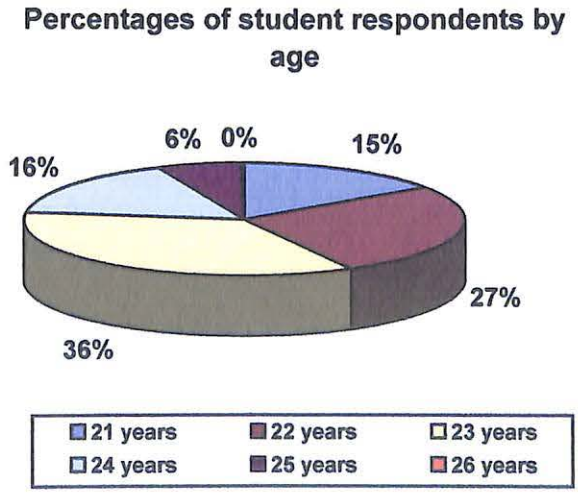


Fig. 3

Percentages of student respondents by their opinion of starting of PBL

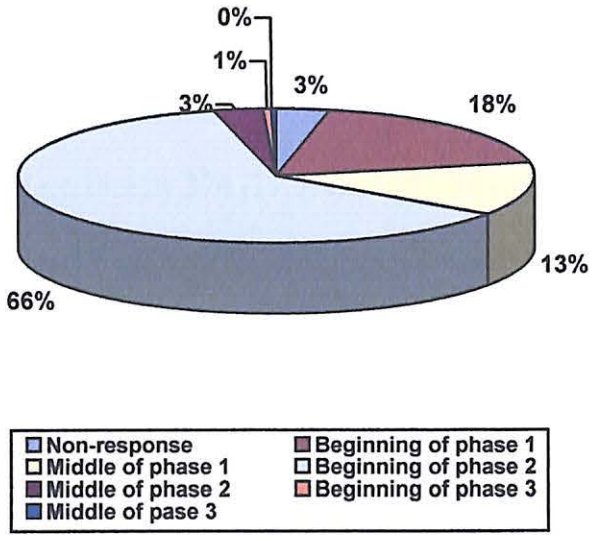
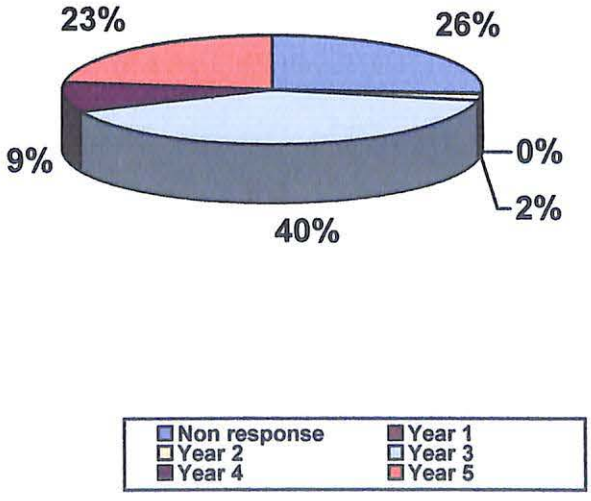


Fig. 4

Percentages of student respondents by their opinion of continuation of PBL



Out of 652 (male-212, female-440) students, a total of 476 (73%) responded to the questionnaires. Most of the respondents were female (74%). The age range was 21 to 26 years. Majority (66%) of them were of the opinion that PBL should be started from the beginning of year two and is to be continued up to end of year three (40%).

PBL sessions were reported interesting by 376 (79.0%) respondents. A total of 195 (41.0%) respondents reported that attending PBL sessions were not stressful. Some of the triggers were considered difficult to discuss by 297 (62.4%) of the respondents. About 44.0% of the respondents felt that all students participated in the PBL sessions. A significantly high majority (86.6%) of respondents felt that some students in their group work harder than others to prepare themselves for the PBL discussion. A total of 381 (80.0%) of respondents expressed that PBL sessions were beneficial in achieving their learning objectives. Three hundred and forty (71.4%) students felt that PBL allowed in-depth understanding of the topic of study. About 80% of 348 clinical students thought that PBL helped them in linking basic science knowledge to clinical appraisal skills. Three hundred and eighty eight (81.5%) respondents mentioned that PBL helped them in developing group interaction skills. Students were undecided about the availability of enough learning resources for PBL sessions but 329 (69.1%) respondents utilized the available resources. Respondents (68.3%) were of the opinion that the time allotted for each of the PBL sessions is enough and 38.4% of the total respondents felt that tutors facilitated PBL sessions effectively. (Table 1)

Table 1. Frequency distribution of students' responses on PBL sessions

Statement	SA and A n (%)	Undecided n (%)	D and SD n (%)	χ^2	p-value
PBL sessions are interesting	376 (79.0)	62 (13.0)	38 (8.0)	448.35	<0.001
Attending PBL sessions are stressful	130 (27.3)	151 (31.7)	195 (41.0)	13.87	<0.001
All students in PBL group participate in discussion	208 (43.7)	89 (18.7)	179 (37.6)	48.53	<0.001
Some triggers are difficult	297 (62.4)	105 (22.1)	74 (15.5)	183.94	<0.001
Some students work harder to prepare them than others to participate in PBL discussion	412 (86.6)	50 (10.5)	14 (2.9)	610.81	<0.001
PBL sessions beneficial in achieving learning objectives	381 (80.0)	69 (14.5)	26 (5.5)	473.15	<0.001
PBL allows in-depth understanding of the topics	340 (71.4)	99 (20.8)	37 (7.8)	322.97	<0.001
PBL helps to link basic sciences knowledge to clinical appraisal skills (responses of 4^{th} & 5^{th} year students only)	277 (79.6)	47 (13.5)	24 (6.9)	337.47	<0.001
PBL provides group interaction skills	388 (81.5)	62 (13.0)	26 (5.5)	501.29	<0.001
Enough learning resources are available for PBL sessions	183 (34.4)	141 (29.6)	152 (31.9)	5.98	0.05
Students utilize learning resources available for PBL	329 (69.1)	110 (23.1)	37 (7.8)	291.08	<0.001
Time allotted for each of the PBL session is enough	325 (68.3)	99 (20.8)	52 (10.9)	265.52	<0.001
Tutors effectively facilitated the PBL sessions	183 (38.4)	182 (38.2)	111 (23.3)	21.48	<0.001

SA = Strongly agree, A = Agree, D = Disagree and SD = Strongly disagree

Students' feedback were also obtained through a more open ended manner on specific areas such as learning resources, class room facilities and facilitators, duration and timing as well as trigger materials for the PBL. Only 22.1% of the respondents provided comments to the open ended questions. Comments presented here are without weightage

Learning resources for PBL

1. Learning sources are not enough.
2. We need complete notes from the department in charge, because sometimes it's difficult for us to read and understand the complete explanation in various textbooks.
3. Names of some reference books and resources (web pages, journal etc) should be made available to the students.
4. Try giving learning resources early than before.
5. Don't give learning materials to students, giving learning material to students make them lazy to study.
6. Internet facility in PBL room would be helpful.
7. Reference books should be available in PBL rooms.
8. In discussing about anatomy it is better to have a model for easier understanding.
9. After finishing PBL give tutors' guide to students.

Class room for PBL

10. Sometimes the marker pen and the duster are not available.
11. Facilities are Ok right now.
12. PBL conducted in the lab is useless, because we can not hear the lecturers.

Duration and timing for PBL

13. Preferably at the morning.
14. Timing is good, as it leaves the morning available for lecture. Afternoon is a good time for discussion.
15. PBL should be held in the afternoon and if possible after the respective lectures.
16. Time should be longer and held on many sessions.
17. Time is enough for every session.
18. Each topic should be at least of 3 sessions, if possible one day gap between each session so that the students can prepare their homework for a more lively discussion.
19. Three times in a week is too much.
20. Time for first PBL session should be short, because at this stage students do not have enough to discuss.

Triggers for PBL

21. Some of the triggers are from previous year, so the juniors (most of them) have the answers (tutor's guide). No effort is needed to find the answers. "The easier we get the answers, the easier we forget".
22. Prepare a few sets of problems for every topic or make a new problem every year.
23. Sometimes there is a lot of things to cover in a single PBL session.
24. PBL is done on our learning objectives, the questions are to be more integrated.
25. Second trigger should be given on the first day in order to give time to the students to find out the important point before attending the second session.

Learning effectiveness through PBL

26. PBL helps to overcome my confusion on certain topic especially physiology.
27. PBL contribute much knowledge with better understanding to achieve the objective.
28. PBL session is good if conducted correctly.
29. PBL is useful in terms of clinical application of basic sciences during clinical years.
30. It is sometimes difficult to grasps the information discussed in the class.
31. Facilitators scold the students if they make mistake or give wrong answers (students afraid to talk).

Achievement of objective in PBL sessions

32. PBL sessions achieve most learning objectives.
33. Sometimes the objectives are too general/wide.
34. Achieving learning objectives depend on group and guidance of lecturer, if they help us.

Facilitators of PBL

35. Facilitators are very important.
36. We need good tutors.
37. Lecturers should preferably be from the department for the particular block
38. If possible, the facilitator should be someone qualified in the field we are discussing. This is to make sure we are not misguided.
39. All the tutors conducting the PBL should be briefed and should have a clear understanding of the topic of discussion.

40. Sometimes tutors are not really guiding us, at one time we don't know which one is correct and which one is wrong.
41. Tutor should prepare himself for the question asked by students.
42. Clinician tutor is more informative.
43. Tutor should know what he/she should/shouldn't do, (they will not be talkative or too silent).
44. The tutor should make sure that all students participate actively (some students are there just for the sake of being there).
45. Facilitator should not be only a silent observer.
46. It is better to have it as a discussion between the students and the tutor and not among the students with the lecturer at the corner.
47. Lecturer should change their role from "the sitting only lecturer" to "more interactive lecturer".

Number of students in a group

48. Too many students in a group (ideally 7-8 students).

Strengths of PBL sessions identified by students

Extent of discussion

1. Detail discussion about a disease.
2. Discussion on a wide topic

Environment of discussion

3. We can discuss freely and clarify what we want to know.
4. Freedom to talk.

Group learning

5. A chance for us to learn from each other.
6. More understanding when we discuss the disease in groups.
7. Division of homework between group members lessens the amount of reading by individual.

Learning abilities

8. PBL helps to understand a topic in depth.
9. Helps me to understand the clinical practice during 4th year
10. Triggers our mind to think to find solution.
11. Helps in thinking rationally.
12. Helps to learn how to think systematically.
13. Faster and easier improvement of knowledge.
14. Creates an urge for more knowledge.
15. A chance for students to correct what is wrong.
16. Good in developing clinical skills and discussion.
17. Good in revising basic sciences.
18. Built public speaking skills.
19. Develops good interaction skills.

20. Improve student's communication skills especially in English.

21. A chance to let students to speak out.

22. Brain storming for better discussion.

Others

23. Personal works / responsibility.

24. Know the important topic that must read.

25. Force students to learn.

26. Train students to search information by doing homework.

Weaknesses of PBL sessions identified by students

Triggers of PBL

1. Using same trigger from year to year.
2. In a trigger too many questions that are very basic.

Group dynamics

3. When everyone keeps quiet it is just waste of time.
4. Sometimes PBL session very dull.
5. Some students do not participate actively and some students just dominate the session.
6. Sometimes the students know but they do not know how to convey their thoughts.

Tutors and tutoring

7. Not fully guided by tutors, sometimes missed information.
8. Doctors guide too much or too less.
9. Some tutors are not expert in handling PBL.
10. Unprepared tutor.
11. Lecturer always interrupts in PBL.
12. Lecturer sometimes talks too much; do not give chance student to talk.
13. Some doctor especially from Dental School cannot handle PBL very well.
14. Some doctors do not understand the concept of PBL especially new lecturer.
15. Certain doctor very bored and hot tempered.
16. Students did not prepare and tutors also did not prepare.
17. Students do not do their homework.

Resources for PBL sessions

18. Learning resources given late.
19. No guideline before attending each PBL.

Others

20. It is like a homework session.
21. All important topics are not covered.
22. Students neglect topics that are important but not covered in PBL.