

Perception of Problem Based Learning by UNIMAS medical undergraduates and graduates

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Abstract

The Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak (UNIMAS), adopts problem-based learning (PBL) and lectures as the hybrid teaching-learning approach in the MD (Doctor of Medicine) programme. There are many batches of graduates now in clinical practice and many undergraduates yet completing their final years. Responses from the graduates of the years 2000, 2001, 2002 and 2003, altogether 113, and the undergraduates (final year students) sitting for the Final Professional Examinations in 2001 to 2006, altogether 314, (total of 427), were studied.

Obtained ratings on three aspects of PBL, namely organization and conduct, triggers, and the overall rating and results were analysed. Significant outcomes were, the comparisons in the ratings between graduates and undergraduates with regards to PBL triggers and the overall PBL rating. Results show that students' perception of *good* in earlier years tends towards *adequate* in recent years, with the reasonably valid concern of *very poor* and *completely inadequate* perceptions by a percentage of the 2006 final year students.

Introduction

The Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak (UNIMAS) aspires to be an exemplary institution in teaching and training medical students to be efficient, knowledgeable, community-oriented and caring doctors of medicine (MD) (Malik & Malik, 2002). The Faculty has adopted PBL and lectures as the hybrid teaching approach in the MD programme (Faculty of Medicine & Health Sciences, 2003). It would be of interest to ascertain the perceptions of the medical undergraduates and graduates who have been through five years of the MD Programme as their responses would be valuable in assessing the degree of efficacy of PBL.

Material and methods

The data for this article was obtained from two sources, the undergraduates' study (Tiong & Johnston, 2006) and the graduates' study (Tiong *et al.*, 2006).

In the undergraduates' study, final year medical students were given the "End of MD Programme Questionnaire" concerning many aspects of the medical curriculum strategies including PBL. They rated the various strategies according to a rating scale from 1 for excellent, to 7 for completely inadequate (Table 1). There were 39 students in 2001, 40 in 2002, 29 in 2003, 35 in 2004, 56 in 2005 and 115 in 2006, totaling 314. The questionnaire was completed immediately after their Final Professional Exams. The response rate was 100% for each batch of students.

The graduates' study included 26 MD graduates in 2000, 39 in 2001, 38 in 2002, and 30 in 2003, totaling 113, and the response rates were 42%, 73%, 92% and 100% respectively. The graduates completed their questionnaire when interviewed in 2004-2005. Both the final year medical students and the MD graduates used the following rating scale to rate the PBL in three aspects, which were: 1. organization and conduct, 2. PBL triggers, and 3. PBL overall. Their rating results were analysed descriptively using the percentage bar charts and statistically using the rating means and t-tests.

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Table 1: Rating scale

Rating	Excellent	Very good	Good	Adequate	Poor	Very poor	Completely inadequate
	1	2	3	4	5	6	7

Results and discussion

The results are considered in terms of the three PBL aspects.

1. PBL Organization and Conduct.

The findings are shown in Figure 1. Each graph corresponds to the undergraduates or graduates for the particular year or year group and has a peak which is the percentage of maximal number of responses in the rating scale. When the graph is of normal distribution and not skewed, its peak is almost the same as the mean value of rating. When the graph is skewed, its peak is not the same as the mean value. However, its peak approximates the mean with the tendency towards the rating on the skewed side.

The graph for 2001 final year students shows a peak at rating *adequate* with a tendency towards

the rating *good* and the graph for 2002 peaks at *good* with a tendency towards *adequate*.

The graphs for 2003 and 2004 final year students peak at *adequate* with no clear tendency. The graphs for 2005 and 2006 both peak at *adequate* with tendency towards *good*.

However, the 2000-2003 MD graduates seem to have responded somewhat better and their rating graph shows a peak at *good*. However, there is a concern in that a few of the 2006 final year students rated PBL organization and conduct as *very poor* and *completely inadequate*.

The statistical analysis based on the comparison of the mean ratings of each year or year group in both final year students and graduates is shown on Table 2 and it shows no significant difference in the comparisons on all the t-tests.

Figure 1: PBL organization and conduct

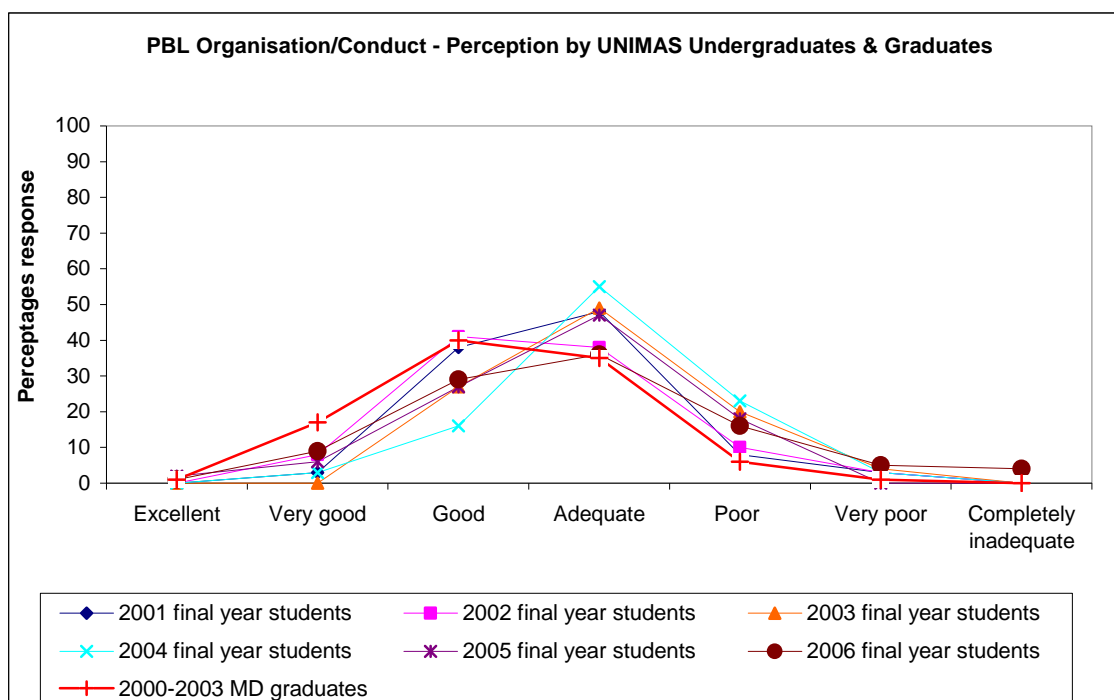


Table 2: PBL organization and conduct

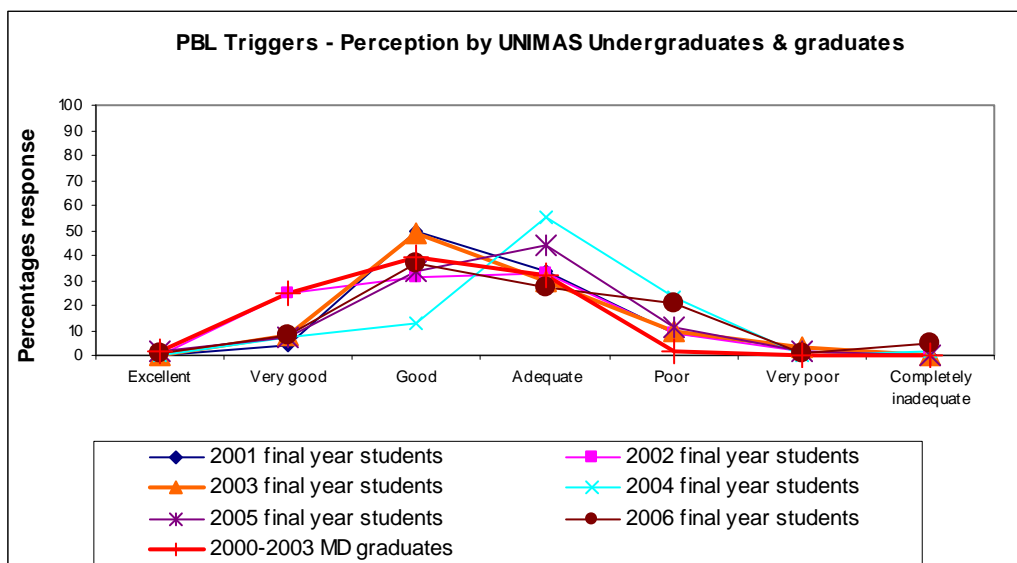
PBL organization and conduct – various groups	Statistical mean based on ratings 1-7	Mean comparison between groups	P value on t-test
2001 final year students – U1	3.64	U1 & U2	0.55
2002 final year students – U2	3.58	U2 & U3	0.17
2003 final year students – U3	4	U3 & U4	0.98
2004 final year students – U4	4.06	U4 & U5	0.24
2005 final year students – U5	3.75	U5 & U6	0.66
2006 final year students – U6	3.9		
2000 graduates - G0	2.89	G0 & G1	0.08
2001-graduates - G1	3.66	G1 & G2	0.72
2002-graduates - G2	3.09	G2 & G3	0.45
2003-graduates - G3	3.39		
2000-2003 graduates - G	3.3	G & U4	0.83
2000-2003 graduates - G	3.3	G & U5	0.67
2000-2003 graduates - G	3.3	G & U6	0.07
2001-2006 undergrad - U	3.8	G & U	0.92

2. PBL Triggers

The findings are shown in Figure 2. The graph for 2001 final year students showed a peak at the rating *good* with a tendency towards the rating *adequate*, the graph for 2002 a peak at *adequate* with a heavy tendency towards *good* and *very good*, the graph for 2003 a peak at *good* with a tendency towards *adequate*, the graph for 2004 peaks at *adequate* with no clear

tendency, and the graph for 2005 peaks at *adequate* with a tendency towards *good*, and the graph for 2006 peaks at *good* with a tendency towards *adequate/poor*. However, the 2000-2003 MD graduates seem to have responded somewhat better and their rating graph shows a peak at *good* with little tendency. There is a concern in that a few of the 2006 final year students responded with a *completely inadequate* rating for PBL triggers.

Figure 2: PBL triggers



The statistical analysis based on rating the mean comparison of each year or year group in both final year students and graduates is shown in Table 2. It shows no significant difference in all the comparisons on the T-tests, except for the 2000-2003 graduates in comparison with 2006 final year students. That is the mean response of 3.07 (almost *good*) by the graduates as compared with the mean response of 3.83 (relatively nearer to *adequate*) is significant, indicating that PBL is rather *good* in the period 2000-2003 than the rating of *adequate* in recent years by 2006 final year students.

3. PBL Overall

The findings are shown in Figure 3. The graph for 2001 final year students showed a peak at the rating *good* with a tendency towards the rating *adequate*, the graph for 2002 peaks at *adequate* with a heavy tendency towards *good* and *very good*, the graph for 2003, peaks at *good* with a tendency towards *adequate*, the graph for 2004 peaks at *adequate* with no clear tendency, and the graph for 2005 peaks at *adequate* with a tendency towards *good*, and the graph for 2006 peaks at *adequate/good* with no clear tendency. The 2000-2003 MD graduates once more seem to have responded somewhat better and their rating graph shows a peak at

good, but with a concern of *very poor* rating by 10% of the graduates. There is also a concern in that a few of the 2006 final year students responded with *very poor* and *completely inadequate* to the PBL overall.

The statistical analysis based on the comparison of the mean ratings of each year or year group in both final year students and graduates is depicted in Table 3 and it shows no significant difference in all the comparisons on the t-tests, except for the 2000-2003 graduates in comparison with 2003 final year and 2006 final year students, as well as with 2001 – 2006 all final year students. That is, the mean response of 3.08 (almost *good*) by the 2000 to 2003 year graduates as compared with the mean responses of 4.1 (near *adequate*) by 2003 final year students, 3.78 (near *adequate*) by 2006 final year students and 3.69 (nearer to *adequate* than *good*) by 2001 to 2006 all final year students are significant, indicating that PBL is rather *good* in the period 2000-2003 than *adequate* in the years 2003 and more recently in 2006. The group comparison between 2000-2003 graduates with 2001-2006 final year students seems to support the perception of *adequate* still in recent years rather than *good* in the earlier graduating years (2000-2003).

Figure 3: PBL Overall

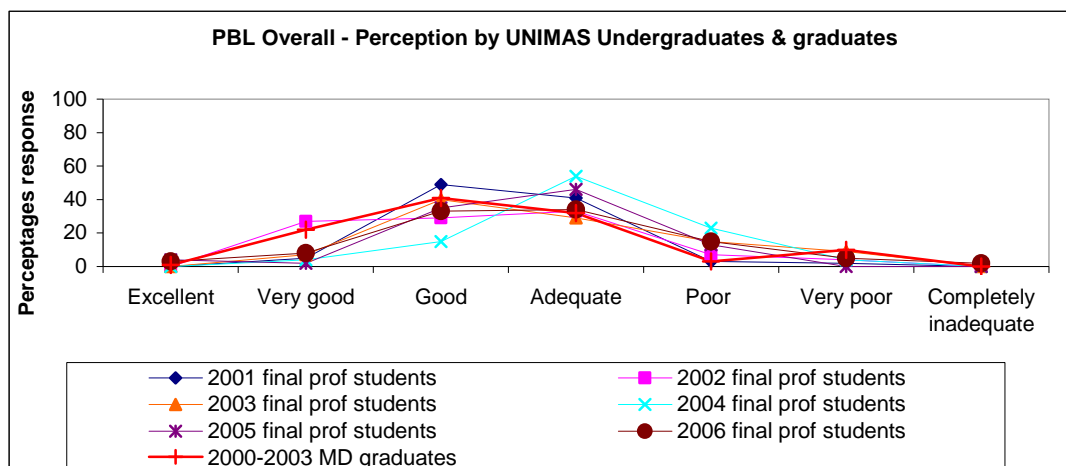


Table 3: PBL triggers

PBL triggers – various groups	Statistical mean based on ratings 1-7	Mean comparison between groups	P value on t-test
2001 final year students – U1	3.54	U1 & U2	0.07
2002 final year students – U2	3.48	U2 & U3	0.28
2003 final year students – U3	3.55	U3 & U4	0.41
2004 final year students – U4	4.06	U4 & U5	0.35
2005 final year students – U5	3.6	U5 & U6	0.06
2006 final year students – U6	3.83		
2000 graduates - G0	2.78	G0 & G1	0.32
2001-graduates - G1	3.21	G1 & G2	0.52
2002-graduates - G2	3	G2 & G3	0.44
2003-graduates - G3	3.13		
2000-2003 graduates - G	3.07	G & U3	0.46
2000-2003 graduates - G	3.07	G & U4	0.65
2000-2003 graduates - G	3.07	G & U5	0.39
2000-2003 graduates - G	3.07	G & U6	**0.02
2001-2006 undergrad - U	3.69	G & U	0.25

Table 4: PBL overall

PBL overall – various groups	Statistical mean based on ratings 1-7	Mean comparison between groups	P value on t-test
2001 final year students – U1	3.59	U1 & U2	0.04
2002 final year students – U2	3.83	U2 & U3	0.58
2003 final year students – U3	4.1	U3 & U4	0.34
2004 final year students – U4	4.11	U4 & U5	0.45
2005 final year students – U5	3.61	U5 & U6	0.11
2006 final year students – U6	3.78		
2000 graduates - G0	2.44	G0 & G1	0.18
2001-graduates - G1	3.52	G1 & G2	0.79
2002-graduates - G2	2.97	G2 & G3	0.77
2003-graduates - G3	2.87		
2000-2003 graduates - G	3.08	G & U3	**0.01
2000-2003 graduates - G	3.08	G & U4	0.68
2000-2003 graduates - G	3.08	G & U5	0.52
2000-2003 graduates - G	3.08	G & U6	**0.01
2001-2006 undergrad - U	3.69	G & U	**0.01

The above graphs show that over the years 2000 to 2006, the great majority of undergraduates and graduates score various PBL strategies between *good* and *adequate*. Statistically there is no significant difference in the undergraduates' perception of PBL organization/conduct, triggers, and of PBL overall, over the consecutive years from 2001 to 2006. There is however some significant difference in the way the 2001-2003 graduates have perceived the PBL, being that in PBL triggers were scored *good* rather than *adequate* in their comparison to the 2006 final year

students. And in the rating if PBL overall, it is again *good* rather than *adequate* in their comparison with the 2003 and 2006 final year students. This alerts us that scores for PBL triggers and PBL overall, show a trend from *good* in earlier years towards *adequate* in recent years. This trend identified in this review would then substantiate the validity of concern that a few of the 2006 final year students responded with *very poor* and *or completely inadequate* when scoring PBL organization and conduct, triggers and overall.

There are many factors likely to account for the worsening trend. Among these factors might be selection and high enrolment of students, high turn-over rate of academic staff and inadequacy of teaching and learning resources. All the factors would require further evaluation which is not part of this research study.

Conclusion

The perception of PBL by 427 UNIMAS undergraduates and graduates has been presented in terms of their ratings on a scale from *excellent* to *completely inadequate* (1 to 7). The findings have been analyzed both descriptively and statistically in three aspects, PBL organization and conduct, PBL triggers and PBL rating overall. Significant outcomes are, with regards to PBL triggers and PBL rating overall, the comparisons in the ratings by graduates with undergraduates show that scores have lessened from a *good* rating in earlier years towards an *adequate* rating in recent years, with reasonably valid concern of *very poor* and *completely inadequate* perceptions by a few of the 2006 final year students.

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