



Assignments for Assistance and Mcqs for Assessment Help Problem Learners Improve Academic Performance in Pharmacology – A Pilot Study

KEYWORDS

Assignments, MCQ, pharmacology, problem-learner, teaching

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ABSTRACT

A pilot study was undertaken to find out if assignments in 'must learn' areas in pharmacology with MCQ assessments and individualised attention help medical students to score better marks. Problem learners were identified among the second year MBBS students of a Government Medical College in South India and assignments were given to them in selected topics in pharmacology. Individualised attention was provided to the students to rectify their mistakes. Their performance in the formative examinations and MCQ tests were evaluated both before and after assignment using student t test. The mean mark in the post-assignment sessional examination was significantly higher than that in pre-assignment sessional examinations ($p = 0.01$). Assignments in 'must learn' areas with individualised attention helped the problem learners develop interest in pharmacology and improve learning. Further, MCQ assessments in addition to being an assessment tool motivated the students to score better marks in the formative assessment examinations.

Introduction

Learning capability differs from one student to another. However, learning is an innate speciality of every human being which goes on irrespective of the formal education provided by the schools and colleges. It is only the speed and magnitude of information that can be imbibed varies from one student to another. This depends upon the environmental factors and need based attention that is provided to a student. For an educational process to be effective, every teacher needs to be aware of these differences.

Problem learners or slow learners are those whose academic performance is significantly below performance potential because of a specific affective, cognitive, structural, or interpersonal difficulty (Vaughn, Baker & DeWitt, 1998). These students are not able to cope with the burden of information thrust on them which leads to their poor performance in the assessment examinations (Cox, Goepfert & Hicks, 2005). The problem learners lack concentration, are unaware of the must know areas, have difficulty in remembering important facts or are disinterested. 'Must know' areas in each topic comprises the facts and skills that a student needs to know to be competent in that field. When their peers answer well in the class and score good marks, the problem learners feel inhibited and do not come forward with their doubts. They do not actively participate in the group discussions and score poor marks in the formative examinations. Levin and Berringer have reported that brain based research helped to identify and treat reading deficiencies in slow learners (Mel L & Mary-Dean B, 2008). Hence identifying the slow learners and providing some additional support to them could help to rectify their academic deficiencies.

A batch of 100 students enter 3rd semester. The average failure rate in each batch is about 5%. But the problem learners comprise about 10-15%. Some teaching-learning activities like group discussions and tutorials are being conducted regularly, but they have not done much to improve the pass percentage in the intermediate examinations. Therefore, it was thought that individualised attention through assignments and appropriate feedback would help the problem learners develop interest in pharmacol-

ogy and score better marks.

Objective

To find out the role of assignments and individualised attention with feedback in improving academic performance in pharmacology among the problem learners of second MBBS

Methodology

The study was conducted for a period of 3 months during non lecture hours in the department of pharmacology. This study was done as a project work following a course in 'Medical teachers training' conducted by the National Teacher's Training Course faculty in the department of Medical Education. In our institute, Pharmacology is taught in the third to fifth semester which involves didactic lectures, problem based exercises, group discussions and tutorials. Five formative examinations are conducted at periodic intervals with a final summative exam at the end of one and a half years. Internal assessment is calculated for each student as an average of the marks obtained in the formative examinations.

Based on the marks obtained in the last three sessional examinations, students who consistently scored low marks were chosen. The reason for their poor performance was assessed by conducting friendly discussions with them. A general description was given to whole class regarding this study and its implications and all students who were interested to participate were invited. 'Must learn' topics were identified in endocrinology and chemotherapy as recommended by Medical Council of India guidelines. Short answer type questions were prepared every week and the students were instructed to answer them in a separate notebook and submit within a week. Answers were evaluated and feedback given to each student individually to improve further. To develop interest among the students and to evaluate the effect of the assignments, MCQs were given before and after each assignment period. The MCQs were evaluated and answers to them were explained to the students collectively.

Pre and post assignment MCQ results, the marks in the pre study sessional examination and that in the post study sessional examination were evaluated using paired t test. Graph pad InStat version 3 was used for statistical analysis. A p value less than 0.05 was considered statistically significant.

Results and Discussion

Fifteen students out of 75 were identified as problem learners and included in the study. Out of the 15, only eight were regular to attend the assignment sessions and they were included for analysis. During the study, the students were interactive, came up with their doubts freely and were interested. They submitted their assignment notebooks regularly. The performances of the students in pre and post assignment MCQ tests are as shown in table 1. There was a significant increase in the mean post assignment MCQ mark while compared to the mean pre assignment MCQ mark ($p < 0.0001$). A significant improvement in the academic functioning of slow learners through individualized education programmes has been reported by Krishnakumar, Geeta, Palat, Jisha, Sukumaran and Nair I (2006 & 2011).

Table 1: Comparison of pre and post assignment MCQ test results

Student no.	Pre assignment MCQ marks (Maximum marks = 10)	Post assignment MCQ marks (Maximum marks = 10)
1	7.00	8.33
2	5.66	8.00
3	4.00	6.00
4	4.50	8.25
5	5.50	8.00
6	4.00	6.33
7	3.00	6.33
8	7.00	9.00
Mean \pm SD	5.08 \pm 1.5	7.53 \pm 1.1*

* $P < 0.0001$, 95 %C.I. -3.1 to -1.8

The performances of the students in the sessional examination before and after assignment exercise are given in table 2. The mean mark in the post-assignment sessional examination was significantly higher than that in pre-assignment sessional examinations ($p = 0.01$). This indicates that writing assignments and clarification of doubts has improved their knowledge in the subject. Assignments were reported to improve lab activity test results in histology in a previously published study by Pawitan et al which supports this study results (Malik, 2009). It has been reported that intervention in the form of education, care and training can improve the slow learners to become achievers (Pawitan & Pattiata, 2010).

Table 2 : Comparison of internal assessment before and after assignments

Student no.	Pre - assignment sessional marks (%)	Post - assignment sessional marks (%)
1	70	83
2	56	80
3	40	60
4	45	82
5	55	80
6	40	63
7	30	63
8	70	90
Mean \pm SD	50.8 \pm 15	75.3 \pm 11*

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1	49	65
2	49	59
3	31	49
4	40	54
5	47	68
6	35	30
7	47	49
8	54	61
Mean \pm SD	44 \pm 7.9	54.38 \pm 12.1*

* $P = 0.01$, 95% C.I. -17.677 to -3.073

In addition to the assignments, using MCQs for evaluation also served as a learning tool to the students. MCQ tests before assignment exercise helped the students understand the important areas to be covered while learning as well as kindled their interest in the subject. Assessment in general and MCQs in particular have been appreciated by educationists as methods to appraise the students about the important and relevant areas to be focused and learnt (Sood & Singh, 2012, Olayemi, 2013).

However three students scored below 50% in the post assignment sessional examination. One among these three students had the language problem and had difficulty in understanding the text books. In the final summative examination in pharmacology, this student with language problem failed whereas the rest passed. Discussion with the students revealed that the assignments were helpful to understand the subject better and they appeared for the subsequent sessional examinations with more confidence. Following their advice, some students in the next batch have approached asking to conduct similar assignments. We feel that providing English language classes in addition to the assignments might be helpful for those students who have difficulty in English.

Slow learners or problem learners comprise about 8-10% in any class of students. The teacher can help these students understand what they must know to pass the examination at the same time build confidence in them to learn. The result of this pilot study encourages identification of the problem learners in a class and provision of assignment based assistance to them along with MCQs to evaluate their progress. For this, dedicated and interested teachers need to spend some extra time in addition to the regular teaching schedule.

Conclusion

Giving assignments and individual attention with adequate feedback can help the problem learners to score better in the examinations. However the consistency in response of the students over a longer duration of time needs to be evaluated.

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