Process Oriented Guided Inquiry Learning: An Alternate Teaching Learning Method for Pharmacology Tutorial

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ABSTRACT

Objectives: To assess the effectiveness of process oriented guided inquiry learning (POGIL), an alternate teaching learning method for pharmacology tutorial.

Methods: This cross-sectional study involved 128 students comprising of two batches namely A and B having 64 in each of them. Their tutorial classes were utilized with disturbing their routine hours and topic for POGIL was announced one week prior to both the batches. On each session one batch was taught by conventional method and another batch was asked to POGIL method under supervision. On each session the group learnt by POGIL was scored higher respectively and it was statistically significant.

Results: Out of 128 students, 74 were girls and 54 were boys, to avoid unconscious bias their tutorial attendance and average of formative assessment was carried and found to be insignificant with p value of 0.342 and 0.246 respectively. And in tutorial session on both session students learnt themselves under guided vision was scoring higher and it was statistically significant as well (p<0.0214 and p<0.0417).

Conclusion: Process oriented guided inquiry learning was found to be effective student centric method and marks obtained by POGIL teaching were higher. It could be effectively used as effective self-directed and innovative learning.

Key words: Self-directed learning, POGIL, Inquiry learning, Long term memory.

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INTRODUCTION

Self-directed Learning (SDL) is defined as learning on one’s own initiative, with the learner having primary responsibility for planning, implementing and evaluating the effort. Self-directed learning is being promoted and hours dedicated for each subject in new Graduate Medical Regulations for undergraduate medical students pursuing Bachelor of Medicine ans Bachelor of Surgery (M.B.B.S). It can pose challenges from panning to implementation mentor preparedness to self-motivation of students to learn on their own. Exploratory and reflective ways of studying is still unmet process for Indian students and cannot be blamed because of because decades of didactic lecture, Instead of fully self-guided learning we adopt and suggested a method called inquiry learning or as well-known as Process Oriented Guided Inquiry Learning (POGIL). It is a kind of self-directed learning under mentor without boredom where undergraduates tend to find their time effectively in employing it.1-3

It helps every student in a tutorial or self-directing learning class to create their own way, a plan and strategy to find their own way of learning. It kindles their intrinsic inquisitiveness. In a study by Brown et al. an optimistic conclusion was found, as there was a post learning increase in right answer for the module given and there were specific answers. In that study they concluded, an inquiry-based peer-assisted learning module increased students’ engagement, practical bioinformatics skills and process-specific knowledge. In another study by Lyros Nybo in the context of exercise physiology it has been proved that in inquiry based step by step approach students understands better exercise physiology.

Pharmacology is complex in a manner in which student need to know lot of names and uses and adverse effects drug profile are mostly similar. Mechanism of action needs better understanding, self-realization rather than being taught simply as retention time in didactic lecture is very less unless we involve them in the process.1-4 In a study by Thea Vangs et al. it has been proved study by inquiry learning reduced memory deca and improves memory consolidation. There is no much available objective Indian studies in the field medicine and in pharmacology per se to determine the effectiveness of POGIL method, hence this study was undertaken in our scenario.

METHODS

This study was undertaken among II MBBS students after obtaining institutional ethics committee approval and valid consent from the students. Full autonomy was maintained and students were advised that they can leave the study at any moment and anonymity will be maintained throughout the study. This cross-sectional study involved 128 students comprising of two batches namely A and B having 64 in each of them. Their tutorial classes were utilized with disturbing their routine hours and topic for POGIL was announced one week prior to both the batches.

Two concept oriented reasoning out type framework with respect to cardiovascular system, in the first week it was put forth how even non selective neta blocker that tend to constrict vessel like propranolol reduces blood pressure and for the second seeion role of diuretics and prostaglandins in kidney auto regulation, urine formation and how it undergoes drug interaction by administered non-steroidal anti-inflammatory drugs were asked to reasoning them in step wise manner. Student were divided during study tutorial period by simply randomization method itself, 64 students belonging to group A sent to conventional tutorial classes in the first hours. Similarly students
Table 1: Sample step by approach questions for undergraduate.

1. What is non-selective beta blocker?
2. What is the function beta2 receptor in blood vessel?
3. What are the actions of propanolol in cardiovascular system?
4. Does non-selective beta blocker propranolol reduce high blood pressure?
5. How propranolol does reduce blood pressure by its action?
6. Mention other contributing actions of this rug to reduce blood pressure?

Table 2: Sample step by approach questions for undergraduate.

1. What are loop diuretics or high ceiling diuretics?
2. How do they reduce high blood pressure?
3. What are the role prostaglandins in kidney?
4. Why aspirin co-administration abolishes function of diuretic?
5. What is diuretic resistance?

Table 3: Analysis of Process oriented guided inquiry learning (POGIL) finding in both sessions.

<table>
<thead>
<tr>
<th>Students (n)</th>
<th>Average score</th>
<th>p’value</th>
<th>Students (n)</th>
<th>Average score</th>
<th>p’value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session I (128)</td>
<td>Group A: 9.9</td>
<td>Group B: 13.3</td>
<td>0.00214</td>
<td>Session II (128)</td>
<td>Group A: 9.7</td>
</tr>
<tr>
<td>Total marks (15)</td>
<td></td>
<td></td>
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</table>
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CONFLICT OF INTEREST

The authors declare no Conflict of interest.

ABBREVIATIONS

POGIL: Process Oriented Guided Inquiry Learning; MCQ: Multiple Choice Questions.

REFERENCES