Objective Triggered Learning: A Method To Put Objectives To Work

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Abstract

Background : Medical sciences advance in rapid strides. The learning sources are voluminous and students may not be able to decide as to what they should learn. To make their learning specific and meaningful a small group teaching learning activity called Objective Triggered Learning (OTL) was introduced.

Aim : To know the students perception, feedback was obtained and analysed.

Methods: OTL is conducted in three phases: forming learning objectives and displaying questions, students find answers and write them down and in the group activity they are encouraged to convert text to diagrammatic forms and explain it to peers. A questionnaire was administered to 27 average performers to obtain feedback.

Results: All 27 found that OTL was useful; writing would help them in scoring better in final examination. Majority expressed that they attend OTL regularly, prepare answers and found one hour session in the afternoon ideal to discuss 10 questions. Quarter of the students suggested an increase in the frequency of OTL classes to more than two per month and an equal number wanted it to be reduced. Some students (11.11-22.22%) did not write answers, often copied from others without understanding, as they were concentrating on other subject assignments and missed OTL session. Some students suggested to include multiple choice questions (MCQs) and presentation to be restricted to show pictures and animations.

Conclusion: OTL is a good teaching learning activity. It helps in understanding the subject by translating content to diagrammatic forms.

Keywords: conceptual diagram, feedback analysis, Objective Triggered Learning, power point.

Introduction :

Medical sciences advance in rapid strides and this gets reflected in the medical curriculum. The learning sources are voluminous and students are often left in lurch as to what they should learn in a short period of time during the busy and overburdened course. [1,2] In this context, formulation of learning objectives and communicating them to the students, planning interactive small group activity based on the predetermined objectives will bring about clarity and make learning easy.[3]

We found that often medical students read their medical text books as they read classics in literature and reproduce the contents verbatim, when they are asked to write answers to theory questions. To make their learning specific and meaningful we designed a teaching learning method in Microbiology based on the predetermined learning objectives which we called Objective Triggered Learning (OTL). We introduced OTL as a small group activity and obtained feedback from the students to improve the method further. In this paper the process and form of the OTL along with the analysis of the feedback obtained is presented.

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Methodology:

We conceived and conducted OTL in three phases. In the first phase the specific learning objectives on "must know" areas on a topic were made and they were converted into questions. On an average ten questions were displayed on the notice board of the department. In the second phase, as directed earlier, students referred to edited textbooks, class notes and other learning material and wrote answers in a book to the questions put up a week earlier on the notice board. In the third phase, on a fixed day as planned, the students were divided into small groups of 10-15 each; the answers to the questions they had written were reviewed and discussed by a teacher in an hour long session. During this session the students were made to write on the board the answers to the questions asked in a concise way by constructing a flow chart, mind map, concept map, hierarchical diagram, labelled diagram, tables or matching columns with the help of a teacher and explain it to their peers. Figure 1 shows the sequence of activities in the OTL. A concept map constructed with reference to the objective: "students should be able to list the mechanisms of Innate

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Immunity" is presented in the figure 2. It organises the mechanisms around five concepts, shown within the circles.

After conducting fifteen OTL sessions, a feedback on OTL was obtained by administering a feedback questionnaire containing fourteen questions to students to assess their perception. The questionnaire included items on the usefulness of the OTL, timing and frequency, difficulty level of the questions, effort and time spent on preparation and regularity in attendance of the students. In a class of 139 students of second MBBS course, 27 average performers in the Microbiology written tests were requested to give feedback on OTL. The feedback obtained was analysed.

Results : The students' response to feedback on OTL is shown in Table 1. All 27(100%) students found that OTL was useful and they felt writing answer to the OTL questions would help them score better in written examinations. Majority of the students (88%-74.07%) felt that OTL sessions were best conducted in an hour duration in the afternoon time. They expressed that they were attending the OTL regularly and preparing answers to the questions. They felt that 10 questions were optimal for discussion in one session and multiple choice questions (MCQs) to be included among them. They were not afraid of teachers who would criticize them for not writing.

Some students (11.11-22.22%) did not find enough time to write answers to the OTL questions. They often resorted to copying answers from others without understanding, as they had to simultaneously concentrate on other subject assignments. They missed the OTL classes if they had not written answers and were afraid of teachers who would scold them for not studying.

There was difference of opinion as to the number of OTL classes to be conducted in a month, quarter of the students suggested that the frequency of OTL classes to be increased to more than two per month and an equal number wanted it to be reduced. A small section of students (14.81%) felt that OTL will not help them in viva-voce examination.

The students made certain suggestions of their own. They wanted the teachers to use chalk board for didactic lectures and the Power Point slides to show only pictures and animations. Some wanted further guidance on how to structure an answer to a question in the examination.

Discussion:

Overall we found that students perceived OTL as an effective teaching learning method. All the 27 students found OTL was useful. They felt that active participation in finding answers to the questions and the discussion that followed in the OTL sessions focused on the key concepts which helped them to remember better and write answers in the examination with ease.

OTL addresses comprehension in the cognitive domain of Bloom's Taxonomy of Educational Objectives.[4] The students are encouraged to translate the idea from linear written forms to diagrammatic forms during the group activity in OTL sessions with the help of a teacher. It is hoped that the skills that are thus acquired may help them in summarizing and integrating facts which paves way for better retention and easy revision.[5,6] In the conceptual diagram presented here (fig. 2), the contents as organised go beyond just listing; the diagram provides a frame work to further extend knowledge and helps in thinking and retention of facts.

OTL combines both assignment and tutorial methods.[3] OTL can further go beyond a routine assignment where good students may be encouraged to use multiple resources like internet, reference books and journal articles on the topic and prepare more extensive answers which can be presented to the peers in small groups.

As students suggested, MCQ can also be included among the OTL questions. During the OTL sessions in addition to the key answer, the correct response to other alternatives can also be discussed.[7] We also think that OTL can be made more relevant by including clinical case scenarios.[8]

In the feedback provided, some students expressed their preference to chalkboard over power point presentation and opined that the power point should be used only to show relevant pictures and animations. These suggestions are reminiscent of the findings of a recent study by Thomas and Appalaraju.[9] Chalkboard seems to be better suited for drawing diagrams, providing explanation and bringing clarity to the concepts [9-11]. In this context, we recommend that diagrams such as concept maps should be constructed on the board during the small group activity with input from the students. Readymade maps should not be projected: this would steal the student activity and make learning passive.

Some students in our study did not actively participate in the OTL sessions. As they confessed in the feedback given, they did not find enough time to answer the questions put up on the notice board; they copied answers from their friends and were afraid to attend the OTL session. However, the response provided by them showed that they had felt OTL to be useful and would help them to answer questions in the examination. We think such students need to be counselled as to the advantages of learning and should be assured that OTL is a teaching- learning activity and not an evaluation method to test their knowledge.

Conclusion:

In summary we found that OTL to be a useful teaching-learning activity. It helped in understanding the subject by translating linear verbal content to diagrammatic forms. It could be further improved upon by including a few MCQs and clinical case scenarios which require higher level of thinking. An evaluation of the method, with predetermined outcome measures on a sizeable population of students may further confirm its utility.

Table 1: Response obtained from the students (**n=27)**

Sl.No	Questions	Yes	No	Suggestions/Comments
1.	Do you think OTL is useful?	27(100%)	0	
2.	Does writing answers to the OTL questions help in the final examination?	27(100%)	0	Writing helps in strengthening memory. Easier to go through the written answers at the time of exams. Helps scoring in internal assessment.
3.	Does answering to OTL questions help in viva-voce?	23(85.18%)	4(14.81%)	
4.	How much time does it take to answer OTL questions?			15 say average of 2-3 hours is required.4 say ask questions orally, writing is difficult.8 students did not respond.
5.	Is one hour enough for OTL discussion?	22(81.48%)	5(18.51%)	Bigger chapters need to be divided into 2 OTL session.
6.	Is afternoon time ideal for OTL?	24(88.88%)	3(11.11%)	Afternoons are sleepy, but OTL makes students interact and be alert.
7.	Is the frequency of OTL classes (2 per month) optimal?	12(44.44%)	14(51.85%)*	7 (25.9%) wanted increase in no. of OTL classes per month.7(25.91%) wanted less than 2 per month.
8.	Are you attending the OTL regularly?	21(77.77%	6(22.22%)	Miss the class if I do not write.
9.	Do you write answers to the OTL questions regularly?	24(88.88%)	3(11.11%)	Makes us read the chapter. Helps to write an answer in examination. Too many questions to be written.
10.	Do you find enough time to answer OTL questions?	14(51.85%)	9(33.33%)	Should be displayed in advance; soon after the class is over. Sometimes we copy from others without understanding. 4 students did not respond.
11.	Too many questions so difficult to write	6(22.22%)	21(77.7%)	Some say 5-7 questions to be discussed in one session.
12.	Would you like multiple choice questions (MCQs) to be included in OTL?	21(77.77%)	5(18.5%)*	Some say 10-12 questions can be discussed in one session.
13.	Do you find it difficult to attend OTL because you are concentrating on other subjects	11(40.74%	16(59.25%)	MCQs help in PG entrance exam. Helps in remembering the key concept.
14.	Are you afraid of teachers scolding in OTL classes	6(22.22%)	20(74.07%)*	Only important questions to be included in the OTL.We have other subject seminars and projects.

*1 student did not respond

OTL: Objective triggered learning

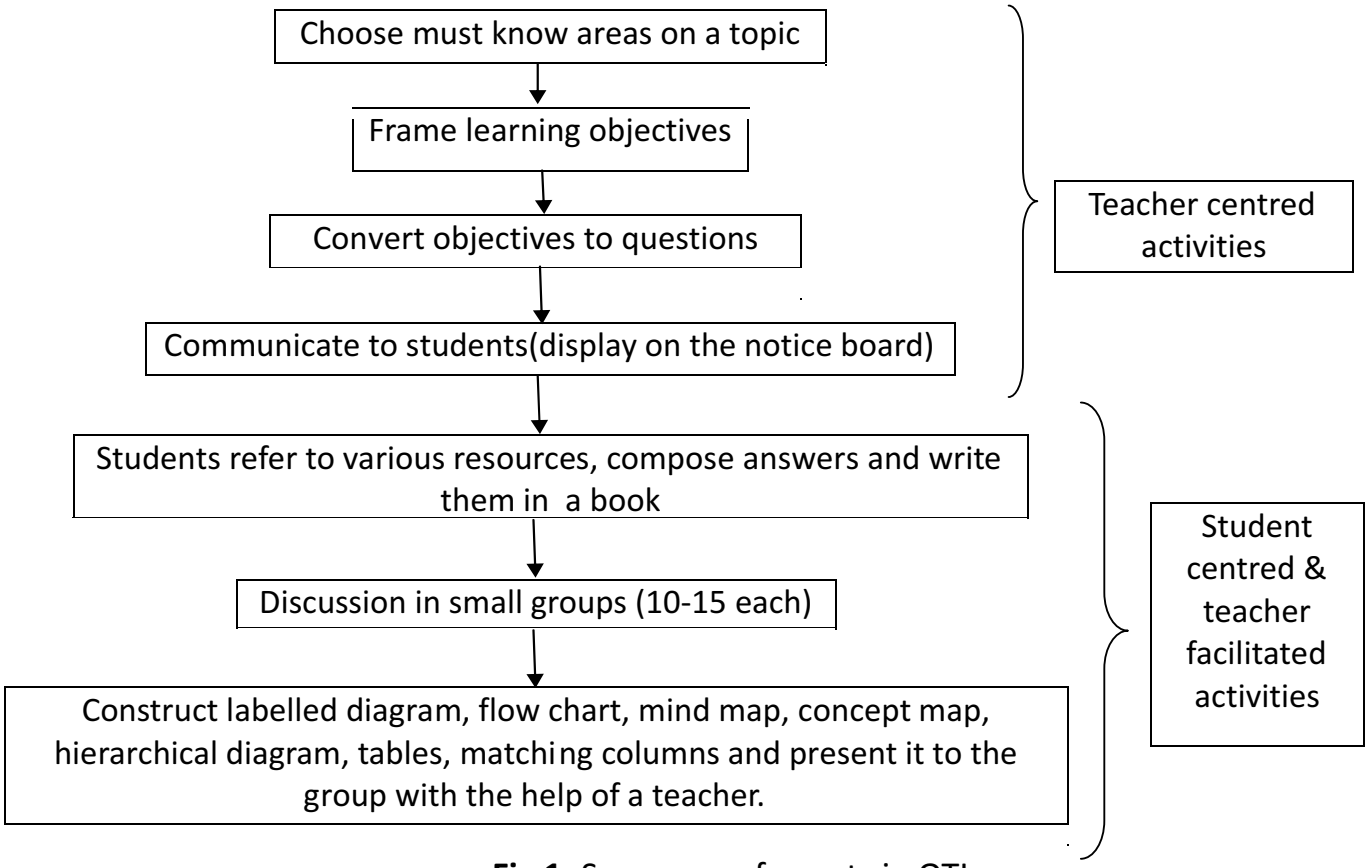

Fig 1: Sequence of events in OTL.

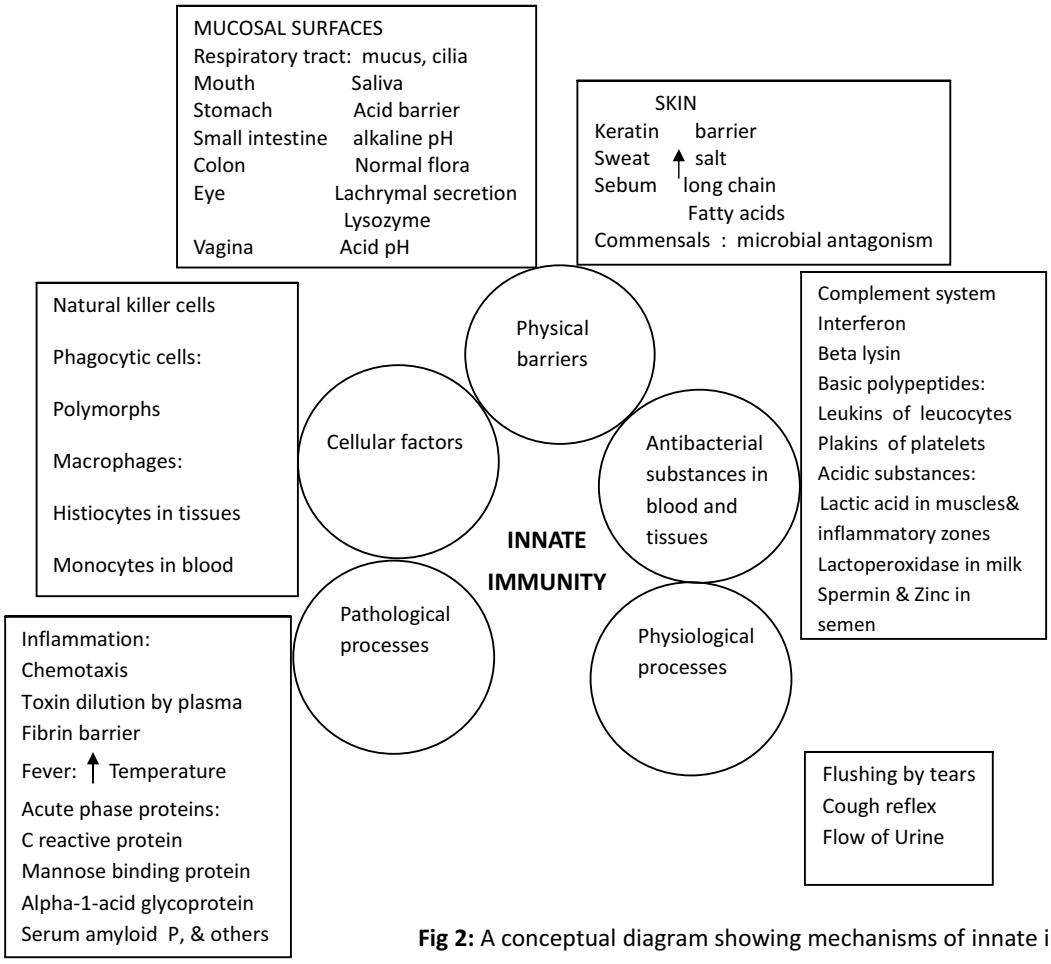

Fig 2: A conceptual diagram showing mechanisms of innate immunity

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