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Original Research Article

Introducing and assessment of FAIR principles of education in teaching biochemistry to I year MBBS students

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ABSTRACT

Background: Recent curriculum is theory based where students just mug up and reproduce in exam with less understanding. It is Exam and marks oriented education. Students show less interest in classes. Presently FAIR (Feedback, Active learning, Individual learning and Relevance) principles of application are practically missing, according to this model students will be naturally motivated to learn. Students will take more responsibility for their own learning. By applying these principles we will improve the effectiveness and efficiency of learning and enhancing learning among students. The objective was to design an effective educational strategy using certain principles of education such as FAIR.
Methods: The first batch of the Integrated Curriculum students of the I MBBS program formed the study population. Certain principles of education such as Feedback, Active learning, Individualization of learning and relevance that have been advocated for use to enhance learning, were applied in educational strategies for the implementation of the Integrated Curriculum.
Results: By Implementing the FAIR model of integrated curriculum the scores obtained during evaluation and the positive student response validated the enhancement of learning objectively and subjectively.
Conclusions: Our collective experience convinced us that designing a curriculum with FAIR model was well worth. 95% students felt it is advantageous with negative perception 35% of students, they felt lengthy and time consuming.

Keywords: FAIR model, Integrated curriculum, Medical education

INTRODUCTION

A teacher is professional not a technician. An understanding of some basic principles about learning can inform the teacher or trainer in their day to day teaching.

The undergraduate MBBS curriculum needs revisions like active learning, exposure to newer teaching techniques, adding some new elements as suggested by MCI in its document Vision 2015. Traditional teaching-learning process is perceived by students as boring and less relevant to their future goal. So we need to think of methods like integrated teaching and objective assessment methods like structured viva.[1-3] We will use the FAIR model for effective learning.

Be FAIR to your students by providing

Feedback: Give feedback to students as they progress to mastery of the expected learning outcomes. Feedback can be thought of as information communicated to the learner that is intended to modify his or her thinking or behaviour in order to improve learning. Feedback provided by the teacher to the student serves a number of functions as It provides a basis for correcting mistakes, clarifies learning goals, rein forces goals.

Activity: Engage the student in active rather than passive learning. It include student centered approaches, problem based learning, traditional teaching is passive where information is passed from the lecturer notes to student notes without going through the brain.

Individualisation: Relate the learning to the needs of the individual student. Students now are less willing to accept teaching and learning opportunities that do not match their needs and help them to achieve their personal learning goals.

Relevance: Make the learning relevant to the students in terms of their career objectives. A major criticism of medical education has been a lack of relevance of the subjects taught.[4-7]

Problem: Recent curriculum is theory based where students just mug up and reproduce in exam with less understanding. Exam and marks oriented education. Students show less interest in classes. There is difficulty in achieving the expected learning outcomes. Objective of class is not clear to students. Most course less relevant to future aspects. So What: Presently FAIR principles application are practically missing, according to this model students will be naturally motivated to learn. Students will take more responsibility for their own learning. The model is introduced for the benefit to the learner in the wide range of contexts in undergraduate, post graduate and continuing education all over. We would like to introduce four key principles about effective learning to which teacher can relate to day to day learning teaching.

Impact: By applying these principles we will improve the effectiveness and efficiency of learning and enhancing learning among students.

Goal: To make IMG more competent with incorporation of active learning, Individual learning and relevance together this will help us to design effective educational strategy.

Objective: To design and implement FAIR principles based on teaching learning module for Biochemistry. To carry out faculty development programme for FAIR principles. To obtain perception of students and faculties for faculty development programme.

METHODS

Study area- Pacific Institute of Medical Sciences, Udaipur, Rajasthan. Study population- 150 I year MBBS students. Study design- Observational. The study was performed after the approval of Institutional Ethic Committee and informed consent from volunteer students. The plan and FAIR principles was explained before the study. A faculty development programme was done to make them aware about the principles of FAIR. Feedback from the faculties was taken. All the participants were delivered integrated lecture with pre and post test 1. The MCQ was validated by faculty members of Biochemistry department.

Then we divided students into small groups of 50 each with demonstrating and hands on work in serum exercise and case based teaching and problem based teaching with objective structured practical examination. All the OSPE and related material was validated. Each group was further divided into 5 groups of ten students for buzz group. These groups were given case reports and problem based questions to discuss.

Feedback- During the practical rotations practical skills were evaluated by the supervisors and immediate feedback was given. Check list for feedback was provided.

At the end of case based study and OSPE station also feedback was given. Finally a post-test 2 was taken to see the gain after FAIR mode of teaching.

Activity- During class room sessions active learning was encouraged through discussions, case based problems. During case based learning student built on what they already knew, applied their knowledge, their understanding and shared their knowledge.

Individualisation: Objective structured practical examination uniformity in process was noted. Students learnt from OSPE discussions were followed by their own learning from text books and e-learning.

Relevance- Relevance was woven in case based learning, where learning objectives were formed on problems and disease diagnosis. This was of high relevance to the students not only for achieving the learning outcomes of the program, but for future practice. Feed back of the students was taken.

Table 1: Implementing feedback- diagram showing how and where feedback was given.

Innovative Lecture Pre-test and Post-Test 1		
practical skills forms, supervisors feedback	CBL, lab reports,	Problem based, OSPE
Post- test 2 Structured viva/Examination/OSPE, Reflective writing		

Evaluation: Students were evaluated by means pre and post test, OSPE and end of course tests, student seminars and CBL records. At the end of evaluation feedback was given to the students on their performance.

Statistical analysis: Appropriate Stastical analysis was done on the quantitative and qualitative data. Gain % and range of score was performed on the data of pre-test and

post-test (1 and 2). Mean and standard deviation will be used to measure the quantitative variables.

Feasibility: Project was feasible and was conducted easily with the help of all teaching and nonteaching staff members in the department.

Budget: The project is affordable at all levels. There is no extra burden to students in terms of expenses at either the institutional or students level Program.

Impact: The positive results motivated the faculty and students to implement new teaching learning method (FAIR) in department to other topics. This will help to create innovation and interaction in our department.

RESULTS

Table 2: comparison between marks obtained in pre-test and post-test using fair model.

Pre-test Before the lecture (n=150)	Post-test 1 After the lecture (n=150)	Post-test 2 After FAIR model (n=150)	P value (1 & 2)	P value (1 & 3)
8.66 ± 2.20	8.99 ± 2.26	15.24 ± 2.86	0.20	0.0001*

*p value <0.05 is significant.

Table 3: Students response to feedback questionnaire (n=150).

Questions	SA	A	N	D	SD
Do you think that given time duration (120 min) is sufficient for FAIR teaching?	101	42	5	1	
Do you think that given questions are adequate in number and adequate in content of the course?	103	47			
Do you think any subjective or objective bias is minimum in FAIR teaching?	135	10			
Do you think that FAIR means is more effective than traditional teaching?	141	9			
Are you Satisfied with this pattern of teaching?	124	26			

(SA=Strongly agree; A=Agree; N=Neutral; D=Disagree; SD=Strongly Disagree)

The Table 2 shows mean and standard deviation of marks of pre-test, post-test 1 and post –test 2 of 150 students. The pre-test score mean was 8.66 with standard deviation of 2.20. We observed that there was very little improvement in the mean marks after post-test1 (8.95) which was taken just after the didactic lecture. Whereas mean values after the FAIR model ie post-test2 showed increased mean with values of about 15.24 with a standard deviation of 2.86. The p value was < 0.0001 which was statistically highly significant. So that the higher average mean marks after post test2 indicate increase in knowledge and better performance of the students.

Table 3 showed the results of feedback form for students based on five point Likert scale. It was found that about 141 (94%) of students strongly agreed that FAIR means is more effective than traditional teaching. This will help them to better retain the subjects as well as students are interested to learn more topics in this manner. Based on a five point Likert scale it was also noted that 124 (82.66%) students strongly reported that an FAIR teaching method was satisfactory, hence helps to clears their doubts and also help them to correlate their basic sciences knowledge with clinical subjects.

Table 4: Teachers response to feedback questionnaire (n=5).

Questions	SA N/ %	A N/ %	N N/ %	D N/ %	SD N/ %
Do you think that given time duration (45 min) is sufficient for fair teaching?	4 80 %	1 20 %			
Do you think that given questions are adequate in number and adequate in content of the course?	4 80 %		1 20 %		
Do you think any subjective or objective bias is minimum in fair teaching?	4 80 %		1 20 %		
Do you think that fair means is more effective than traditional teaching?	5 100 %				
Are you satisfied with this pattern of teaching?	5 100 %				
Maintain discipline in the class?	5 100 %				
Appropriate use of different teaching aids and methods?	4 80 %	1 20 %			
Rate the session for the following (1-5)					
4(80%) 5(100%) 5(100%)	1(2 0%)				

(SA=Strongly agree; A=Agree; N=Neutral; D=Disagree; SD=Strongly Disagree)

From the Table 4 it was found that 5 (100%) faculty strongly agreed that the FAIR teaching model was more effective, satisfied pattern, disciplined than lectures. It is

also noted that 4 (80%) teachers strongly agreed that in this method content, aids and questions were adequate and hence enable the student to learn the topic as a whole. The present study also revealed that about 5 (100%) faculty strongly agreed that the usefulness of this FAIR teaching method.

Results of the study were analyzed based on the Mean Likhert Score from the Student response questionnaire and the scores obtained by the students during their Final semester examination were positive in the student's response showing that FAIR principles of education were accepted by students and also enhanced their learning

DISCUSSION

The result obtained from the present study showed the effective learning using FAIR model of principle in teaching organ function tests.

The decrease in interest, lower attendance in classes in first year is a big challenge for teacher and management. The reason found was boring lectures with chalk board, no activity and no individuality.

So we tried a new method of teaching with FAIR model with liver function test which involved every step feedback, activity, individuality and relevance. The results were surprising with very good response by the students. Teachers also agreed and found this model more efficient and fascinating

The student responses to the questionnaire showed a definite positive response but it was only subjective evaluation. The evidence in support of the use of these principles of education in the integrated curriculum was in student's performance in the final semester theory examinations. Our results are in agreement with the studies of Norman and Schmidt who pointed out that students working in small teams have positive effect than self directed learning.[6] Our results showed that FAIR model of teaching was more beneficial, more interesting, more innovative, more interactive, showed indepth knowledge, showed increase in critical thinking, easy to operate and showed self directed learning.[7,8] The practical examination and OSPE showed that students performed better than before.

Limitations

The limitation of this study is that it was done only on a single topic and in single batch to know the effectiveness and acceptability of students in a new medical college. Students taught with FAIR model had better self-direction, active involvement and interactivity hence should be implemented in curriculum. It enables learning with all domains, hence should be introduced in curriculum.

CONCLUSION

Teachers and students feedback showed positive results towards the FAIR teaching method. FAIR model should be implemented so that students can actively and interactively participate in learning and competent IMG could be produced.

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REFERENCES

1. Harden RM, Laidlaw JM. Be FAIR to students: Four principles that lead to more effective learning. Medical Teacher. 2013;35:27-3.
2. Chandra PS, Shree S. MCI's VISION 2015 & PG medical selection: continuing to produce square pegs for round holes? Ind J Medic Ethics. 2012;9(1):7-9.
3. Linda Suskie. Fair Assessment Practices: Giving Students Equitable Opportunities to Demonstrate Learning. AAHE Bullet. 2000:1-6.
4. Hattie J, Timperley H. The power of feedback. Review of Educational Research. 2007;77:81-112.
5. Bonwell CC, Eison JA. Active Learning: Creating Excitement in the Classroom,ASHEERIC Higher Education Report No.1, George Washington University, Washington, DC; 1991.
6. Norman G, and Schmidt H. "Effectiveness of Problem-Based Learning Curricula: Theory, Practice and Paper Darts," Medical Education. 2000;34:721-8.
7. Fox J. Why Are We Doing This? Establishing Relevance to Enhance Student Learning" The Teaching Professor. 2010;24(5):1.
8. Irene N Thomas, Manda Venkatraman. Making Fair, Fairer- Implimenting the FAIR-ER principles of education in an intergrated curriculum Gulf Medic J. 2013;2(S2):S153-S1.

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