Section: Medical Education

Original Research Article

EVALUATION OF INTEGRATED TEACHING METHOD FOR PHASE I MBBS USING KIRKPATRICK'S EVALUATION METHOD

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ABSTRACT

Background: Students can participate in meaningful, intentional learning with the help of integrated teaching. As part of our evaluation strategy, we used Kirkpatrick's evaluation approach to gauge how well this method was working with students as well as how much they were learning and how their behavior was changing.

Materials and Methods: It was an Educational Interventional study done at Era's Lucknow medical college & Hospital for a period of 1 year in three Departments of Phase I MBBS (Anatomy, Physiology and Biochemistry) using Kirkpatrick's Evaluation Model. Three topics were scheduled for Integrated teaching as follows: Cardiac cycle for Physiology, Gross anatomy of heart for Anatomy, and Lipid metabolism for Biochemistry. Didactic lectures were organised and pre-test and post- test was done 3 days before and after lectures. Evaluation was done at 3 levels- Reaction, Learning and Behaviour. SPSS was used for analysis.

Results: 70% – 90% of the students rated good, better, best, for their perception about teaching & learning by integrated teaching; while 10%-20% students rated poor & satisfactory for their perception about teaching & learning by integrated teaching. Students' performance was significantly raised in all the three post tests than those of the pre tests.

Conclusion: Considering the results of this evaluation, we should use integrated teaching as a standard teaching strategy. It demonstrates the value of integrating instructions in medical education.

Keywords: Kirkpatrick's evaluation model, Integrated teaching, didactic, Likert scale.

INTRODUCTION

Coordination of various learning activities to support the smooth operation of the educational process is referred to as integration in education. Without being constrained by traditional subject barriers, students can explore, gather, process, revise, and present information about areas they are interested in. An integrated teaching approach enables students to participate in relevant, purposeful learning.[1] With no extraneous information, this method simplifies basic sciences and teaches them alongside clinical sciences. In order to impart the knowledge in a comprehensive manner, faculties from the Departments of Anatomy, Physiology and Biochemistry participated in this horizontal integrated teaching style.[2] It is important to analyze this teaching strategy in order to check that the goals set forth in the curriculum have been achieved. Any educational program, whether it is at the national level or a college course, must include evaluation as a fundamental component of its design and implementation. Effective instructional initiatives should be dynamic and updated frequently.[3] In this context we planned the evaluation of integrated

teaching method in the Phase 1 MBBS students using Kirkpatrick's evaluation method.

MATERIALS AND METHODS

It was an Educational Interventional study done in 150 students at Era's Lucknow Medical College & Hospital for a period of 1 year in three departments of Phase I MBBS (Anatomy, Physiology and Biochemistry) using Kirkpatrick's Evaluation Model.[4] Those students who were willing to participate and had given written informed consent were included in the study. The study was approved by Institutional Ethics Committee.

Methodology: A committee for interdepartmental coordination was established, and it was made up of a professor from each department of Basic sciences and the head of that department. All of these departments worked together to create, coordinate, implement, and assess the whole program.

Three topics were scheduled for Integrated teaching as follows: Cardiac cycle for Physiology, Gross anatomy of heart for Anatomy, and Lipid metabolism for Biochemistry. Didactic lectures were organised and pre-test and post- test was done 3 days before and after lectures.

Evaluation was done in 3 levels- Reaction, Learning and Behaviour. 'Reaction' was evaluated with the help of student's feedback with standard set of questionnaire, based on the Likert's scale to know what students think about the integrated teaching method. 'Learning' was evaluated by the pre test and post test which includes questions based on relevant case scenarios for each topic. 'Behaviour' was evaluated by comparison of the performance of the students between formative and summative assessments. This gives information about change in the behaviour of students few months after the learning. Case scenario based questions, clinically relevant short questions were asked in summative examination. To find out what faculty thought of this integrated teaching approach, a feedback form was deployed.

Statistical Analysis: The statistical analysis was performed using SPSS for windows version 22.0 software (Mac, and Linux). Feedback was calculated through five point Likert scale. The findings were present in number and percentage analyzed by frequency, percent, and Chi-square test. Chi-square test was used to find the association among variables. The critical value of P indicating the probability of significant difference was taken as <0.05 for comparison.

RESULTS

Table 1: LIKERT scale questions

Question-1	I am interested to participate in this TL method
Question-2	This TL method is stimulating.
Question-3	It helped to develop my problem-solving skills in future practice.
Question-4	The teaching time is put to good use.
Question-5	The teacher over emphasize the factual learning.
Question-6	The teacher had good interaction with us.
Question-7	This TL method is useful for me.
Question-8	I feel confident to pass if more problem-solving sessions
Question-9	Enjoyment in the sessions outweighs the stress of studying
Question-10	I can clear doubts with the teacher.
Question-11	This TL method motivated me as a lifelong learner

[Table 1] shows the question asked during integrated teaching in reaction and learning process through 5 point Likert scale.

Table 2: Students' Perception about Teaching & Learning by Integrated Teaching

Likert scale	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
TL method	A	B	A	B	A	B	A	B	A	B
Q-1	33%	22%	58%	58%	6%	15%	3%	4%	Nil	2%
Q-2	17%	13%	49%	64%)	25%	16%	8%	32%	1%	Nil
Q-3	19%	17%	49%	54%	27%	17%	Nil	24%	Nil	2%
Q-4	21%	28%	64%	46%	12 %	17%	3%	24%	Nil	4%
Q-5	Nil	4%	4%	2%	16%	12%	38%	37%	42%	41%
Q-6	2%	33%	8%	52%	24%	10%	39%	4%	27%	2%
Q-7	27 %	26%	57%	49%	13%	20%	3 %	2%	Nil	2%
Q-8	30%	28%	38%	56%	30%	12%	1%	2%	1%	2%
Q-9	5%	9%	52%	47%	33%	29%	10%	12%	Nil	3%
Q-10	1%	10%	8%	44%	41%	29%	36%	10%	14%	7%
Q-11	17%	11%	54%	51%	22%	28%	3%	9%	4%	2%

Ranking – 1 - Poor, 2 - Satisfactory, 3 - Good, 4 - Better and 5 – Excellent (1+2=A), (3+4+5=B)

As per [Table 2] all feedback questions for perception of students towards does not show much difference. 75% – 90% of the students rated good, better, best (3, 4,5 respectively – Likert's scale) for their perception about teaching & learning by integrated teaching; while 10%-25% students rated poor & satisfactory (1,2 respectively- Likert's scale) for their perception about teaching & learning by integrated teaching.

Table 3: Comparison of pre-test and post-test scores in different sessions

Session	Test score	Mean +/-SD	P value Student t test
Anatomy	Pre-test score	2.86+/-1.30	0.404
		2.72+/-1.27	
	Post-test scores	8.50+/-1.20	.036*
		8.78+/-0.88	
Physiology	Pre-test score	2.95+/-1.22	0.247
		2.77+/-1.28	
	Post-test score	7.46+/-1.85	.001*
		8.70+/-1.12	
Biochemistry	Pre-test score	2.75+/-1.15	.052
		2.48+/-1.05	
	Post-test score	8.26+/-1.80	0.004*
		8.83+/-1.22	

As per [Table 3] the comparison of pre-test scores and post-test scores of integrated teaching each session is shown. It is observed that prior to the intervention there is no significant difference in the pre-test scores. After intervention by the post test scores were significantly higher in all sessions. This suggests that knowledge of the students significantly improved in the group receiving integrated teaching.

Table 4: Student's Perception about Organization of Integrated Teaching Program

Likert scale	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
TL method	A	B	A	B	A	B	A	B	A	B
Q-1	16	82%	18%	88%	16%	85%	13%	84%	14	72%
Q-2	17%	83%	19%	84%	15%	86%	18%	83%	11%	79
Q-3	19%	87%	19%	84%	17%	87%	17%	84%	8%	77%
Q-4	21%	88%	14%	86%	12 %	87%	13%	84%	10%	74%
Q-5	16%	84%	14%	82%	16%	82%	18%	87%	12%	74%
Q-6	12%	83%	18%	82%	24%	90%	19%	84%	17%	72%

As per [Table 4] Shows Students' perception about organization of integrated teaching program – 83% - 88% of the students rated good, better, best (3,4,5 respectively- Likert's scale) for organization of integrated teaching program; while 12% - 17% students rated poor & satisfactory (1,2 respectively- Likert's scale) for their perception for organization of integrated teaching program.

DISCUSSION

We evaluated the integrated teaching method by Kirkpatrick's evaluation model. Kirkpatrick's evaluation model is used for analyzing and evaluating the result of educational program. Active participation in each of these educational procedures aided in the growth of higher levels of cognitive domain. The attainment of the higher levels of cognitive domain through these sessions is what allows for the development of confidence and competence. The pupils' satisfaction with this teaching strategy may be attributable to this. Ofoghi et al. also noted participant satisfaction when assessing the learning process using this model. The percentage of students who were scored 1; as per five point Likert's scale for both questionnaire 1) for perception of learning & satisfaction and 2) Perception of organization of integrated teaching program; was very less (16%) as compared to others. This may be because; these students have not participated actively in the integrated teaching.[5]

Adult learners learn more effectively when they understand the application of what they have learned, according to andragogy principles. Questions and conversations based on case studies encourage learning and aid in the development of students' higher levels of cognition. Students gained an understanding of the importance of basic sciences in the clinical setting through integrated education. With the help of this program, group conversations took place that may have inspired the participants to pursue independent learning, leading to rich and fulfilling learning. As students participate in the learning process, retention rates increase as well. Frequent instruction may also contribute to pupils' improved post-test performance.[6,7]

In the summative evaluation as opposed to the formative assessment, there was a noticeable improvement in student performance and a decrease in the number of failed pupils. All of the foundational science courses had higher passing rates. The newly adopted way of learning, self-directed learning with group discussions, may be advantageous for students in preparation for the final examination, and as a result, their performance in the summative assessment significantly improved. Retention owing to active learning and consequent memorizing.

Similar alterations were also noted by Heydrai et al in their investigation, supporting our findings.[7-9] Satisfaction of students for this teaching method; better learning by the students and significant change in the behaviour of the students; all these results of evaluation suggest that integrated teaching method is the suitable method to achieve learning objectives as per the new curriculum.[10]

CONCLUSION

For the first year, integrated instruction in MBBS program was evaluated using Kirkpatrick's evaluation technique, which provided a more accurate picture of the students' learning, contentment, and capacity to apply what they had learned. As a result, we were able to determine whether the integrated teaching technique had achieved its intended objectives thanks to this review. Considering the results of this evaluation, we can successfully keep using integrated teaching as a standard teaching strategy. It demonstrated the value of integrating instruction in medical education.

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