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Theme of this Issue
Portfolio Method of Assessment

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Portfolio: A Newer Method of Assessment

Dr.Santosh Kumar, Professor and Head of Departments of Urology and Medical Education and Mr.Z.Zayapragassarazan, Assistant Professor of Education Technology, Department of Medical Education, JIPMER, Puducherry

What are the challenges in the assessment of graduate medical students?

The assessment of graduate medical students needs change so the various competencies expected from them can be assessed. Six domains of competencies as listed below have been identified by the Accreditation Council for Graduate Medical Education (ACGME), USA.[1]

1. Patient care
2. Medical knowledge
3. Practice-based learning and improvement
4. Interpersonal and communication skills
5. Professionalism
6. Systems-based practice

Nine areas of abilities are described at Brown Medical School.[2]

1. Effective communication
2. Basic clinical skills
3. Using basic science in the practice of science
4. Diagnosis, management and prevention
5 .Lifelong learning
6. Professional development and personal growth
7.The social and community contexts of healthcare
8. Moral reasoning and clinical ethics
9. Problem solving

In view of the varied nature of competencies that need to be assessed, it is becoming common to use Miller's Pyramid[3] as the basic concept in assessment. Miller's Pyramid comprises four levels of assessment. The first level (Knows) includes conventional written and oral assessments. The second level (Knows How) comprises patient management problem and key features problem.[4] The third level (Shows How) consists of Objective Structured Clinical and Practical Examinations (OSCE and OSPE), standardized patient based testing, simulations and role plays. The fourth level (Does) includes portfolio, 360 degree assessment, Direct Observation of Procedural Skills (DOPS) and Mini-Clinical Evaluation Exercise (mCEX).[5] The fourth level (Does) denotes in vivo performance assessment or work based assessment.

What is a portfolio?

Three definitions of a portfolio are given below:

"the term signifies a purposeful collection of work."[6]

"A portfolio is a collection of papers and other forms of evidence that learning has taken place."[7]

"It is a collection of student work that exhibits the student's efforts, progress and achievements in one or more areas."[8]

What can be the contents of a portfolio?

It is said that "The evidence in portfolios is limited only by the degree of the designer's creativity."[8]

A portfolio can consist of following types of materials.

1. Written records (paper or soft copies)
2. Video or audio records
3. Multimedia records

How to assess cognitive domain by a portfolio?

Cognitive domain can be assessed by the portfolio method by giving assignments and

projects to students. The assignment and project reports can be kept in the portfolio so that assessment can be done at a convenient time.

How to assess psychomotor domain by a portfolio?

Video recordings of clinical procedures (such as abdominal examination, pelvic examination, urethral catheterization or venepuncture) performed by a student on manikins or patients can be done and kept in a portfolio for viewing to provide reinforcing and corrective feedback.

How to assess affective domain by a portfolio?

Communication skills can be assessed by the portfolio method by videorecording various student-patient and student-relative encounters and the video recordings can be filed in the portfolio for future assessment at a convenient time.

Attitudes can be assessed by the portfolio method by asking students to write their points of view on appropriate topics such as patient-centred medicine, compassionate behaviour or empathy and filing them in their portfolio for future assessment at a convenient time.

How to assess non-scholastic abilities by a portfolio?

Literary, scientific, cultural, sports and organizational activities of students can be recorded and kept in their portfolio for future assessment at a convenient time.

How to assess self-reflecting ability by a portfolio?

Self-reflecting ability of students is an important skill for practice-based learning and improvement which is one of the six domains of competencies identified by the Accreditation Council for Graduate Medical Education (ACGME), USA. Students can be asked to make records of their practice-based learning and improvement which can be filed in their portfolios for future assessment at a convenient time.

An example of portfolio assessment in graduate medical curriculum.

In Dundee Medical School, Scotland, portfolio method is used to assess mainly following outcomes in final examinations of medical students.[9]

1. Communication skills.
2. Information handling
3. Understanding basic, clinical and social sciences
4. Appropriate attitudes, ethical and legal responsibility
5. Decision making, clinical reasoning
6. Role of the doctor
7. Personal development

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Questioning – A Vital Teaching Tool

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"All our knowledge results from questions, which is another way of saying that questioning is our most important intellectual tool." (Neil Postman)

Questioning is one of the most important devices of teaching. It plays an important role in teaching, learning and testing process. The minds of the learner and the teacher can be brought into close touch and the learner can be led to creative effort through questioning. In fact it is a key to all educational processes.[1] The purpose of questioning in medical education is manifold. Good questions during teaching;

(a) help students to participate actively in lessons,
(b) provide an opportunity to students to express their ideas and thoughts, and
(c) allow students to hear divergent opinions from fellow students.

They draw attention to and highlight important points in the teaching and develop confidence and feeling of success in the students leading them beyond the conventional patterns of thinking. Good questions also help teachers evaluate their students' learning and thus revise the lessons as necessary. Questioning is a tool that can be incorporated into routine teaching moments. It is also important to vary the style of questions depending on the teaching, learning and evaluation needs.[2,3]

1. Recall Questions

Recall questions are used to prompt the learner to recall facts (scientific, medical, patient related, skill related). Students and interns who are just beginning to develop clinical reasoning skills (in a particular field) may initially only be able to answer recall questions. Although knowing the answers to these types of questions is often critical, we should challenge them to analyze, synthesize and apply as well.

Example:

What are the most common causes of wheezing?
What is the patient's oxygen saturation?
What is the correct way to examine the lungs?

2. Analysis/Synthesis Questions

Analysis and synthesis questions require the learner to demonstrate understanding of a topic, rather than just list the facts. The learner is able to create a context into which the individual pieces of data fit. The learner must apply deductive reasoning and logic to answer these questions.

Example:

How can we differentiate among the given list of diagnoses?
What factors are influencing your choice of diagnoses?
How do the patient's various symptoms relate to the diagnosis?

3. Application Questions

We ask the learner to apply what they know (information and understanding) to a specific patient. We can ask them to apply their knowledge, skills, or attitudes to the management plan, diagnosis, procedure, etc. These questions can be recall application or analysis/synthesis application questions.

Example:

How will you treat a patient's hypoxia?
How will you know when you have confirmed the diagnosis?
Can you show me the techniques you used to assess ventilation?

4. Self Assessment Questions

Self assessment questions require learners to assess themselves at every level: Their basic knowledge, their ability to synthesize data (for diagnosis or plan), their ability to apply knowledge, their technical skills and their attitudes.

Example:

Do you think you have enough experience to deal with this patient?

Do you think you understand the pathophysiologic mechanisms of diabetic ketoacidosis?

How would you handle this same scenario if presented with it again?

All types of questions can assess Knowledge, Skills or Attitudes. All questions can be open or closed ended. Thus when judiciously used questioning could arouse the curiosity of the learners and sustain their interest in the subject and also help to achieve creativity among them.[1] It is good to avoid question that require a yes or no answer. If they are used we may need to ask some probing questions. Example: How did you come to that conclusion? Student to student interaction may also be encouraged through questioning. Example: What do you think about a given idea? Also questioning should not be overused at any point of teaching which may bring in negative effects in the motivation part of the learners.

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Objective Structured Clinical Examination (OSCE) as a Method of Formative Evaluation in Ophthalmology

Dr. Subashini Kaliaperumal, Assistant Professor, Department of Ophthalmology, JIPMER, Puducherry

Introduction

The regular format in a Ward leaving test in Ophthalmology is a clinical case presentation (25 marks) and viva voce (25marks). The viva is evaluated by the consultants where students are assessed on any topic arbitrarily and this tests mostly the lower levels of cognitive domain. The uniformity in terms of difficulty level of the questions and allocation of marks is not maintained. This discrepancy can be rectified to a major extent by OSCE[1]. Moreover, most of the psychomotor skills required in ophthalmology which the student 'must know' can be assessed by this method. Such skills developed would later come handy during their career as a clinician in any field.

Objectives

To introduce and evaluate OSCE as a method of conducting Ward leaving test for students posted in Ophthalmology Clinics.

Methods

The study was conducted on the students of 6th semester (Batch of 2006) attending the second clinical posting in ophthalmology at JIPMER, Puducherry.

Every clinical batch of 16/17 students were evaluated by OSCE instead of the regular viva voce. A total of 4 such batches were tested.

The OSCE consisted of 8 stations with each station being allotted time duration of 3 minutes. There were 4 procedural stations to assess the skills such as pupillary reactions,

extraocular movements, visual acuity, lid eversion, perception of light, digital tension and corneal sensation amongst others. The other 4 response stations consisted of identifying an instrument, fundus or slit lamp photographs and identifying the type of the trial lens.

The observers were present for the procedural stations only and included consultants, residents and interns who were provided with a check list for every skill tested. Strict discipline was observed. The questions were changed for each clinical batch to avoid repetition and boredom.

At the end of OSCE, a feedback form was requested to be filled up by the students and returned.

The feedback was in the form of a questionnaire and the students were given the choice of keeping their names anonymous.

Results

A total of 65 students took the OSCE. The maximum mark awarded was 25. The percentage of students who passed the test (>50% marks) was 86%. The various percentage of marks scored by the students are given in Table 1

% marks	No. of students	% students
<50%	9	14
51-60%	8	12
61-75%	27	41
>75%	21	33

The replies to the feedback questionnaire were as follows: Table 2

S. no.	Question	Yes	No	50/50	Others
1	Were the questions relevant?	63	1	1	
2	Were the questions in the 'must know' curriculum?	61	1	3	
3	Were the questions ambiguous?	10	53		2-No answer
4	The questions were they easy or difficult?	23-easy	11-difficult	21	
5	If difficult, what was the difficulty level?	24-mild			
6	Did the evaluation test the full range of abilities?	50	8	7	
7	Was the test objective?	54	11		
8	Did the test reduce bias?	57	6		2-no idea
9	Did the test cover a large range of subject areas?	51	11	1	2-No answer
10	Did the test facilitate learning?	60	5		
11	Were you relaxed or tensed?	42-tensed	23-relaxed		
12	Was there any time limitation?	17	47		1-No answer
13	Was the test fairly conducted?	63	1		1-No answer
14	Was the test helpful on the whole?	61	2		2-No answer

Discussion

The pass percentage amongst the students with the method of evaluation by OSCE was 86%. About 74% of students scored above 60% marks. Only 9 students scored less than 50%.The above study clearly demonstrated the high scoring rate of the candidates with OSCE. Not only did this better their internal assessment, it made the examination interesting and helped students learn a few examination techniques if not all.

More than 80% of the students gave a positive reply to most of the questions of the feedback questionnaire. 42 students felt tensed at

the time of OSCE but that is always there before any examination and it is a known fact that some tension is required to perform well. Eleven students felt that the stations were tough nuts to crack but that is probably due to the poor preparation. Overall it facilitated learning in more than 90% of students as per the feedback.

Preparatory work for the OSCE like setting up and selecting the questions, preparation of checklists to be provided to the observers, arrangement of the stations and selection of observers and cooperative patients was cumbersome and quite demanding. But the above average performance of the students and the positive feedback received vividly demonstrated the usefulness of this method of evaluation.

A discussion of the mistakes made by the candidates and explanation of the right technique and answers was not possible due to lack of time. This was a drawback of the study. As the stations were close to each other with no partition between them it was easy for the candidates to observe what and how their counterparts were performing. This was another limitation.

Conclusion

OSCE proved to be a better method of evaluation of students in the formative examinations in ophthalmology.

Acknowledgement

1. NTTC teaching faculty, JIPMER for their guidance in selection of topic.
2. Dr. Vasudev Anand Rao, Professor and Head, Dr. Renuka Srinivasan, Professor, and my colleagues Dr. Shashi Ahuja and Dr. Ramesh Babu of the Department of Ophthalmology for their constructive criticism.
3. The junior and senior residents, interns, OPD and ward sisters for their timely arrangements and help on the day of conduction of OSCE.
4. The MBBS students (6th semester) for their participation and cooperation.

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The Effect of Problem-Based Learning on Education and Recall of 1st year MBBS Students in Comparison with Lecture-Based Learning

Dr.Sasmita Mishra, Assistant Professor of Biochemistry,
Dr G.N.Deepti and Dr P.Padmanaban, Junior Residents of Biochemistry, Aarupadai Veedu Medical College, Puducherry.

Introduction

In our Institute, LBL (Lecture based learning), unilateral lecturing is the method that has been used for teaching the 1st year MBBS students. How far it is effective that is not known because it is never compared with other methods of learning. Undergraduate medical education, as with any other educational programme, needs ongoing improvements to meet the changing demands of medical practice. Medical education should be given the same emphasis as research and patient care.

PROBLEM-BASED LEARNING (PBL) has gained much attention and implementation in medical education. It is a student-centered method of teaching, which is considered one of the most significant educational innovations. Several studies have shown that PBL has at least five advantages over Lecture based learning (LBL) in areas like Structuring of knowledge, Development of an effective clinical reasoning process, Better retention of information, Development of self-directed learning skills, Increasing motivation for

learning etc. So we decided to compare both types of teaching learning processes (PBL and LBL) in our Institute and compare the outcomes.

Objective

Was to compare the effect of problem-based learning on education and recall with the conventional mode of teaching.

Methods

To perform the study the 1st year MBBS students (2010-2011 batch) were randomly divided into two groups (A & B).The topic chosen was Fat soluble Vitamins. Two separate two hours sessions were conducted.

In the first session two vitamins were taught to group-A using modified PBL method and the same thing was taught to group-B using Lecture based learning. In the second session another two vitamins were taught to group-B using modified PBL method and group-A using the LBL method so that all the students were exposed to both types of teaching. In PBL the students were given five modified problem type questions which they discussed among themselves and at the end of the session the concerned topic was discussed.

At the beginning of each session, pre-test exams & at the end of the session post –test exams were taken from the students to evaluate their educational level. The pre-test and post-test were taken in the form of 15 MCQs from the concerned topic.

Four weeks after each session another exam consisting of 4 short essay questions each carrying 5 marks was conducted to evaluate the students recall level.

After collecting all the data statistical analysis was done using Microsoft excel.

Table-1

The Results of Pre and Post –Test Exams of PBL And LBL Groups in Session One

	Pre-test Average	**Post-test Average**
LBL (n=55)	6.47	9.28
PBL (n=41)	5.82	10.26
P value	P=0.102	P<0.005

Table-2

The Results of Pre and Post –Test Exams of PBL and LBL Groups in Session Two

	Pre-test Average	**Post-test Average**
LBL (n = 41)	6.25	9.55
PBL (n = 54)	6.27	11.83
P value	P=0.96	P<0.0001

Table-3

The Results of Recall –Tests of PBL and LBL Groups in Session One and Two

	Session-1 Average		**Session-2 Average**
LBL (n = 54)	8.69	**LBL (n = 41)**	8.91
PBL (n = 41)	9.75	**PBL (n = 52)**	9.68
P Value	P=0.022	**P Value**	P=0.025

Result

This study was performed on 1st year MBBS students of Arupadai Veedu Medical College. In the first session 55 and 41 students attended for LBL and PBL classes. The average score of Pre-test of LBL and PBL groups were 6.47 and 5.82 (out of 15) respectively. This difference was statistically not significant (p=0.107).

The average post test score of LBL group for session-1 was 9.28 and of PBL group was 10.26 respectively. This difference was statistically significant (p <0.005) as shown in table-1. The average score of recall exam of LBL group for session-1 was 8.69 and of PBL group was 9.75

(out of 20) with a p value equals to 0.022.(shown in table-3)

In the second session 41 and 54 students attended for LBL and PBL classes. The average score of Pre-test of LBL and PBL groups were 6.25 and 6.27 (out of 15) respectively which was not statistically significant (p=0.96).

The average post test score of LBL group for session-2 was 9.55 and of PBL group was 11.83 respectively. This difference was highly significant ($p < 0.0001$). The average score of recall exam of LBL group for session-2 was 8.91 and of PBL group was 9.68 (out of 20) respectively($p < 0.05$).This was also significant.(Shown in table-1 and table-3)

Discussion and Conclusion

The result of this study showed that the students are more successful in learning and recalling when PBL was used as the educational method. The students were randomly divided into two groups and in the second session they were exchanged for the methods of teaching so the effect of personal differences of the students was eliminated**.** The pre-test scores of these groups showed no statistical difference, so difference of the post-test scores could be due to the effect of educational method.

In our study it was confirmed that PBL is definitely better than LBL for selected topics.

But further studies should be taken on different topics before applying PBL as the method of teaching in this institute.

Acknowledgements

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2. All the students of 1st year MBBS (2010-2011 Batch).
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Educational Projects Initiated during 62nd National Course

The 62nd National Course was held at JIPMER from 19th to 29th January 2011. The following project proposals presented by the participants were approved. We wish them speedy execution of the project proposals and look forward to receiving the final reports.

S.No.	Submitted by	College	Title
1.	Dr. Chaya A.Kumar, Associate Professor	LTMMC & LTMGH, Mumbai	Perspective of II MBBS students towards lectures as a Teaching Learning method in Microbiology
2.	Dr. Suvarna Joshi, Associate Professor, Microbiology	B J Medical College, Pune	Reasons for not attending theory classes
3.	Dr. Nitin Gangene, Professor and Head, Dept. of Pathology	MGIMS, Sevagram	SWOT analysis of IInd MBBS students at MGIMS, Sevagram
4.	Dr. Benhur Premendran, Assistant Professor, Dept. of Anaesthesiology	MGIMS, Sevagram	Correlation of the sleep patterns of medical students with their academic performance in examinations.
5.	Dr. Chakradhar Rao Guduri, M.D Associate Professor of Medicine	Siddartha Medical College, Vijayawada	Preparation of MCQ Bank in General Medicine
6.	Dr. Sridevi.G. , Associate Professor (Community Medicine)	Mediciti Institute of Medical Sciences	Study of communication skills and attitude of medical students through point – of - view writing

S.No.	Submitted by	College	Title
7.	Dr. Padmavathi. V. Assistant Professor, Dept. of Pharmacology	MediCiti Institute of Medical sciences	Analysis of "Must Know" areas covered in Pharmacology theory question papers of II MBBS of NTR University of Health Sciences.
8.	Dr. Shanmukananda.P. Associate Professor of Pharmacology	Dr.B.R.Ambedkar Medical College, K.G.Halli, Bengaluru	Identifying learning techniques among high achievers
9.	Dr. Balachandra.N. Assistant Professor, Dept. of Anatomy	Dr.B.R.Ambedkar MedicalCollege, K.G.Halli, Bengaluru	To identify self learning methods adopted by students of Dr.B.R.Ambedkar Medical College who have passed I MBBS.
10.	Dr. Nirupama Kasturi, Lecturer	Dr.B.R.Ambedkar MedicalCollege, K.G.Halli, Bengaluru, Karnataka	Formulation of a MCQ bank in Ophthalmology
11.	Dr. Shaista Choudhary, Assistant Professor of Pathology	Dr B R Ambedkar Medical College, Bengaluru	Objective structured practical examination (OSPE) as a teaching learning and evaluation method for undergraduates in pathology
12.	Dr. Sheena P. S. Assistant Professor of Physiology	Government Medical College, Thrissur	Using interactive teaching methods to improve learning outcomes among I MBBS students with special reference to the students with learning problems.
13.	Dr. Haseena.K.A, Assistant Professor of Pharmacology	Government Medical College, Thrissur	Interactive lectures and the impact of it in MBBS Students in Pharmacology
14.	Dr. Sheela Sivan, Associate Professor, Anatomy	MES Medical College, Palachode	Facilitating and Hindering factors in learning Anatomy among I MBBS in MES medical college.
15.	Dr. Sheela.P. Haveri, Associate Professor, Community Medicine	MES Medical College, Palachode	Evaluation of University question papers in Community medicine.
16.	Dr. P.K.Siva, Assistant Professor, Department of General Medicine	Mahatma Gandhi Medical College & Research Institute, Puducherry	Effectivness of MCQ test after a lecture in improving The Learning outcome of under graduate MBBS students at MGMC&RI
17.	Dr. N.Mugunthan, Assistant Professor, Dept. of Anatomy	Mahathma Gandhi Medical College & Research Institute, Puducherry	To study the learning effectiveness in learning Anatomy using Cadaver and Medical simulation (Manikins) by IMBBS Students.
18.	Dr. Arun babu. T, Assistant Professor of Pediatrics	Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry.	Can multiple choice questions administered at the beginning of a lecture improve learning? A prospective interventional study.
19.	Dr. Rahul Dhodapkar, Assistant Professor, Dept. of Microbiology,	JIPMER, Puducherry	Formulation of Specific Learning Objectives for Parasitology lectures and their impact on faculty and students
20.	Dr.Ganesh Kumar, Assistant Professor, Dept. of P & SM	JIPMER, Puducherry	Non scholastic abilities and its associated factors among undergraduate medical students in JIPMER, Puducherry
21.	Dr. Sitanshu Sekhar Kar, Assistant professor of PSM	JIPMER, Puducherry	"Students-centred learning"-Are students ready? A case study from JIPMER, Puducherry.
22.	Dr. Chanaveerappa Bammigatti, Assistant Professor of Medicine	JIPMER, Puducherry	Formative assessment of final year MBBS students at JIPMER in the affective domain
23.	Dr. Haritha Sagili, Assistant Professor of Obstetrics and Gynaecology	JIPMER, Puducherry	Attitude of MBBS students towards powerpoint, overhead projector and chalkboard teaching: Does it matter?
24.	Dr. Muthukumarassamy, Assistant professor of Surgery	JIPMER, Puducherry	Attitude of medical teachers towards the use of chalk board, overhead projector and LCD in classroom teaching for undergraduate students

ANNOUNCEMENTS

MEDUCON 2011

Medical Education Conference 2011 (MEDUCON 2011) is proposed to be held on 01.10.2011 and 02.10.2011. The details about MEDUCON 2011 will be available in JIPMER website (www.jipmer.edu.in) shortly. All medical teachers and allied health professional teachers are welcome to attend it.

Department of Medical Education
JIPMER, Puducherry

JIPMER NTTC Alumni Association

All medical teachers and allied health professional teachers who have attended the National Courses on Educational science for Teachers of Health Professionals of National Teacher Training Centre, JIPMER, Puducherry are requested to send the following information to nttc.jipmer@gmail.com to enable us to send the Bulletin of NTTC and facilitate communication.

1. Name, designation and full postal address
2. e-mail address

Secretary
JIPMER NTTC Alumni Association

Medical Education – Principles and Practice

Medical Education – Principles and Practice – a reference book published by JIPMER NTTC Alumni Association and popular among the Medical Teachers is available for sale. Interested medical teachers and institutions may send a crossed DD for Rs.325/- (including postal charges) in favour of Alumni Association of NTTC, JIPMER, payable at SBI, Puducherry, towards the cost of a single book to Secretary, JIPMER NTTC Alumni Association, C/o. Dept. of Medical Education, JIPMER, Puducherry-605 006.

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