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Program Evaluation –A Report

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FOREWORD

Dear FAIMERIy,

I am delighted to present my work on Program Evaluation, the M-L Web discussion topic for the month of August 2009. The words of Lao Tzu, "A journey of a thousand miles begins with a single step" has added my knowledge in medical education, which I could feel in my journey of FAIMER. I learnt various concepts of program evaluation and how it will enhance the body of knowledge and quality of service in the disciplines of both the academicians and clinicians. Program evaluation has always been an important administrative tool.

As medical professionals, we should be able to evaluate teaching, learning and treatment programs in an effort to determine which program or its component contributes the most (in patient care/ student performance outcome) in the most cost effective manner. I have made my efforts to bring various issues of Program Evaluation under one roof as a discussion report.

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Introduction

The PSG-FRI listserv has given us an opportunity to learn about the developing and emerging concepts in medical education through ML Web discussions as one of its sources. It has enhanced self learning and has helped to develop many other qualities as a medical health professional. Medical education is becoming more sophisticated in terms of the demands it makes on the teacher, the student and the institution and teaching standards need to be assured. Among the monthly ML –Web discussion, Program evaluation was discussed in the month of August 2009 and with the help of the faculty and fellows, the learnt and evaluated concepts of Program evaluation is presented here.

Methodology

With an internal communication between the faculty mentors and the program moderators regarding the topics to be discussed on Program evaluation, it was finally planned to focus on the types, methods, uses, standards, planning and barriers of program evaluation and also about how it is applied in Indian set up. It was through the electronic discussion that we could do an in depth review of literature on the above-mentioned topics, with a set of survey questions and with a few stimulating questions we could proceed to the August month M-L web discussion.

Summary of Discussions

What is Program Evaluation?

When we consider, "What is a Program?" Typically, organizations work from their mission to identify several overall goals which must be reached to accomplish their mission. In nonprofits, each of these goals often becomes a program. Nonprofit programs are organized methods to provide certain related services to constituents, e.g., clients, customers, patients, etc. Programs must be evaluated to decide if the programs are indeed useful to constituents.

Program evaluation is carefully collecting information about a program or some aspect of a program in order to make necessary decisions about the program. [1]

Program evaluation is a rich and varied combination of theory and practice. It is widely used in public, nonprofit, and private sector organizations to create information for planning, designing, implementing, and assessing the

results of our efforts to address and solve problems using policies and programs. Evaluation can be viewed as a structured process that creates and synthesizes information intended to reduce the level of uncertainty for stakeholders about a given program or policy. It is intended to answer questions or test hypotheses, the results of which are then incorporated into the information bases used by those who have a stake in the program or policy. [2]

Medical education is becoming more sophisticated in terms of the demands it makes on the teacher, the student and the institution and teaching standards need to be assured. [3] Evaluation is one of the essential elements of the educational process. Various evaluation approaches have been described, including objectives-oriented, expertise-oriented, management-oriented, naturalistic and participant-oriented approaches, as well as those using various models like logic model (Worthen & Sanders, 1987; Demirel, 2002; Mc Neil, 1996; Mennin, 2004; Logic Model Development Guide, 2001). Educational institutions have been advised to weigh the advantages and disadvantages of different evaluation models and approaches and to develop an institution-specific evaluation model that meets their particular needs (Worthen & Sanders, 1987).

It has also been suggested that program evaluation emphasizes both educational processes and outcomes (Demirel, 2002). When evaluating an educational program, an evaluation plan should be prepared in accordance with the general principles of the program's objectives and the pressing questions about it that should be answered. For each program evaluation question, a format consisting of the evaluated parameter and its rationale, data collection method, indicator/criteria, data analysis/interpretation, implementation frequency, authorities receiving the reports and identity of the evaluators should be developed (Nevo, 1995; Curriculum 2000 Program Evaluation Study Group Final Report, 2000).

Definitions

Evaluation has been defined as systematic investigation of the merit, worth, or significance of an object [4, 5]. During the past three decades, the practice of evaluation has evolved as a discipline with new definitions, methods, approaches, and applications to diverse subjects and settings [5, 6, 7, 8]. The following were also added as a part of definition of program evaluation in the discussion.

- Programme evaluation is a process of reviewing the quality or standards of a coherent set of study modules.
- Programme evaluation may be part of an accreditation or re-accreditation procedure, (re)validation, or a subject assessment undertaken for internal or external processes.

Wojtczak (2002) defines programme evaluation in the context of medical education as either formative or summative:

Formative program evaluation provides information in order to improve a program's performance. It usually takes the form of surveys of learners to obtain feedback about and suggestions for improving a curriculum.

Summative program evaluation measures the success of a curriculum in achieving learner objectives for all targeted learners, its success in achieving its process objectives, and/or its success in engaging, motivating, and pleasing its learners and faculty.

Kristoffersen (2003) states:

A programme evaluation covers a specific programme as a whole, or selected aspects thereof. Most often, the aim is to provide an overall assessment of the programme, and programme evaluations typically encompass all components that influence programme quality. This includes components like the study environment and the organisational framework in which the programme operates.

For HEQC (Higher Education Quality Committee) (2004):

Programme evaluation: The external quality assurance processes undertaken to make an independent assessment of a programme's development, management and outcomes and to validate the findings of an internal programme review.

One of the stimulating questions, "What way can a program evaluation be a part of accreditation (for ex -NAAC)"?...gained an information stating that programmes accreditation establishes the academic standing of the programme or the ability of the programme to produce graduates with professional competence to practice.

Kirkpatrick's model for evaluating educational outcomes

In an attempt to learn about the evaluation of educational outcome, Kirkpatrick's model was studied. Kirkpatrick has described four levels of program outcomes to be assessed (Kirkpatrick 1998).

The first level is learners' and instructors' reactions and contentment with the program. The second level is to assess the increase in learners' knowledge and skill, and the third level evaluates whether learners apply their new knowledge and skills through appropriate behavioral changes in their subsequent work/roles. The fourth level is to evaluate the impact of the program on the

institution and society in which the program was implemented. It has been suggested that program evaluation should start with assessments of the first evaluation level and then, within practically achievable limits, continue with the second through fourth levels (Nickols, 2003; Kirkpatrick 1998; Hutchinson 1999).

Level 1	Reaction	Participants' views on the learning experience, its organization, presentation, content, teaching methods, and quality of instruction
Level 2A	Learning – Change in attitudes	Changes in the attitudes or perceptions among participant groups towards teaching and learning
Level 2B	Learning – Modification of knowledge or skills	For knowledge, this relates to the acquisition of concepts, procedures and principles; for skills, this relates to the acquisition of thinking/problem-solving, psychomotor and social skills
Level 3	Behaviour – Change in behaviour	Documents the transfer of learning to the workplace or willingness of learners to apply new knowledge & skills
Level 4A	Results – Change in the system/organizational practice	Refers to wider changes in the organization, attributable to the educational program
Level 4B	Results – Change among the participants' students, residents or colleagues	Refers to improvement in student or resident learning/performance as a direct result of the educational intervention

The levels of evaluation planned in our Faimer projects were reviewed. The level 1 (i.e., analyzing the feedback) & level 2 were most commonly used. Assessing at level 2 moves the evaluation beyond learner satisfaction and attempts to assess the extent students have advanced in skills, knowledge, or attitude. Measurement at this level is more difficult and laborious than level one. Methods range from formal to informal testing to team assessment and self-assessment. If possible, participants take the test or assessment before the training (pretest) and after training (post test) to determine the amount of learning that has occurred. Level 3, knowing about the change in behaviour (i.e., applying new knowledge and skills) were less commonly used in the projects.

CIPP (Context, Input, Process, and Product) model, which is a comprehensive framework for systematically evaluating program effectiveness (Stufflebeam, 2003) was reviewed. The CIPP model fits well with the Higher Learning Commission's commitment to continuous quality improvement. Whereas some evaluation plans focus primarily on program outcomes, the CIPP model includes input, process, and context evaluation to inform change at all

levels of assessment. Not all components of the CIPP model need to be evaluated at the same time. For example, context components are generally more stable and may need less frequent evaluation. Input, process, and product evaluation, on other hand, are more dynamic and may need more frequent assessment to inform decisions about program quality and effectiveness.

Dimensions of Program Evaluation & Overview of Needs Assessment

Program evaluators may assess programs on several dimensions to determine whether the program works. Rossi et al. (2004) divide these dimensions into 5 main categories: needs assessment, program theory, process analysis, impact analysis, and cost-benefit & cost-effectiveness analysis.

In discussing needs assessment, there was a need to analyze, "If needs assessment is a must before doing a program evaluation and how important it is. Are there any methods for conducting a need assessment?"

A needs assessment is a systematic process to collect and analyze information on what a target group needs to learn. Although the value of conducting a needs assessment is not well established, it is being used by some medical educators to develop curriculum for the training programs. We felt that needs assessment should be conducted before any adult educational activity so that the available resources can be used to the maximum benefit of the learners. Learning needs assessments are often conducted to identify deficiencies in knowledge, skill, behavior, or attitude in the current teaching practices, or to anticipate deficiencies based on expected changes in health care needs [15].

Types of needs

Normative needs are defined as the measured gap between the set standards and the individual's or group's current knowledge

Prescribed needs are those areas that educators or program planners determine as inadequate and that need educational intervention.

Felt or perceived needs are what the individuals or the group have identified as what they want to learn. These are the learner's needs as perceived by the learner. These needs are characterized by the sentence, "I know what I don't know."

Expressed needs are what an individual or group express as their needs. It would be naïve to assume that all perceived needs are expressed because there may be several real or perceived barriers to expression. For example, learners may not want to be identified as lacking knowledge, or they may lack the

opportunity to express their needs. Learners may also lack the motivation, communication skills, or assertiveness to express their needs.

Comparative needs are those learning needs identified by comparing two similar groups or individuals rather than against normative standards.

Unperceived needs are discrepancies not perceived by learners as learning needs.

Needs assessment is definitely an important aspect on which the very foundation of any programme should be based. And continuing needs assessment and how far these needs are being fulfilled would be a very important tool to assess the success of the program. Follow through assessment is a must for long term programmes with far reaching implications like our Medical Education.

Needs assessment should be addressed in our project to exactly know what the students want, where there is a lacuna and how it can be overcome. All this will make the project a success and bring about changes in our institutions.

Needs assessment should also be an important aspect often overlooked while planning short term programmes like our 'Training of Trainers' programmes conducted for teaching staff of our Medical Colleges and also planning educational interventions like our educational research projects. This will facilitate tailoring the contents - width & depth wise - for the different groups of the target participants. This will highly enhance the utility of these short programmes.

Learning needs assessment is a crucial stage in the educational process that leads to changes in practice, and has become part of government policy for continuing professional development. Learning needs assessment can be undertaken for many reasons, so its purpose should be defined and should determine the method used and the use made of findings. Exclusive reliance on formal needs assessment could render education an instrumental and narrow process rather than a creative, professional one[19].

It was also clearly found that we can evaluate the non-academic (hidden curriculum) along with the academic program while doing the PE in Medical Education, and by getting get feedback (360 degree) from all stakeholders (and health care team members) there is a possibility of getting to know the outcome of a program irrespective of whether it is stated in the curriculum or not (hidden). The frequency of needs assessment depends on the nature of the program and the outcomes. A GAP analysis at each level i.e - finding out the gap between the current situation and the desired or necessary situation could be a possible method to set standards for a normative assessment as well as for the frequency of conducting an evaluation.

It was accepted that as the evaluation is undertaken to facilitate decision-making, it should not be an expert driven isolated academic exercise, but it should take students' concerns into account. So it is better to opt for a Participatory evaluation in Medical Education where students are seen as one of the stakeholders and not as subject or beneficiary.

Assessment and Evaluation

Although the terms are often used interchangeably, there is an important difference between assessment and Evaluation. Chittenden (1991) defines assessment as process of collecting and organizing information or data so that learning may be evaluated or judged. Evaluation uses the results of assessment to make judgements about growth (how much an individual has changes) and progress (Owen, 1994). Yet Assessment and evaluation are closely related. Assessment is possible without evaluation; however evaluation is not possible without assessment.

Is evaluation assessment similar to analyzing the feedback of participants and thus knowing about the effectiveness of the program?

From educational point of view, the term assessment is reserved/ restricted to individual students (though in India we call it student evaluation) who are beneficiaries of educational programs and evaluation to evaluation of programs / courses/ rotations/ curricula or the learning experiences or programs the students go through (program evaluation). Evaluation also includes value judgments concerning the desirability of results and is not limited to quantitative descriptions.

The similarities stated between assessment and evaluations were:

- Both involves assessing impact of action
- Both have similar procedures
- Both are intended for improvement or refinement based on findings

Differences between Assessment and Evaluation

In terms of why and how the measurements are made, the following table (Apple & Krumsieg, 1998) compares and contrasts assessment and evaluation on several important dimension [14].

Dimension of Difference	Assessment	Evaluation
Timing	Formative	Summative
Focus of Measurement	Process-Oriented	Product-Oriented
Relationship Between Administrator and Recipient	Reflective	Prescriptive
Findings, Uses Thereof	Diagnostic	Judgmental
Ongoing Modifiability of Criteria, Measures Thereof	Flexible	Fixed
Standards of Measurement	Absolute	Comparative
Relation Between Objects of A/E	Co-öperative	Competitive

Methods of Program Evaluation

How to evaluate your program?

Determine and document desired outcomes, activities and indicators

The determination of desired outcomes, activities, and indicators should take place during the planning stages of project development, such as during the grant writing process. However, it is never too late to get strategic about program evaluation. Regardless of how far you have traveled down the road toward implementation, for evaluation purposes it is essential to identify and document the program outcomes, activities, and indicators that will be evaluated [29].

Develop the stratigies to assess the quantitiy and quality of the program achievements

Once program outcomes, activities, and indicators have been drafted, you need to revisit the indicators and consider whether they capture the different types of information that will be necessary to evaluate the program.

The data that you gather about your program's quantity and quality can be used to make decisions about program implementation and development. Quantity and quality measures enable you to make informed, mid-course adjustments in program implementation and help you to accurately showcase the effectiveness of your program's services and activities. It's essential to utilize quantity and quality data collection tools from the outset of the project.

In mixing of qualitative and quantitative methods, it was discussed if we can use qualitative methods to collect quantitative data and quantitative methods to collect qualitative data? Though it was accepted that qualitative can be used for quantitative and quantitative can be used for qualitative except for statistical purpose, there is a considerable difference between conducting and utilizing qualitative evaluations and quantitative evaluations. In practice a good evaluation often will combine the two types of evaluation, unless there are clear limitations or restrictions due to skills of personnel involved or a cost-or time-factor to be observed [30].

There are four major types of mixed methods designs [31]:

1. Triangulation Design

The most common and well-known approach to mixing methods is the Triangulation Design (Figure 4.1a) (Creswell, Plano Clark, et al., 2003). The purpose of this design is "to obtain different but complementary data on the same topic" (Morse, 1991, p. 122) to best understand the research problem. The intent in using this design is to bring together the differing strengths and non-overlapping weaknesses of quantitative methods (large sample size, trends, generalization) with those of qualitative methods (small N, details, in depth) (Patton, 1990).

2. Embedded Design

Researchers use this design when they need to include qualitative or quantitative data to answer a research question within a largely quantitative or qualitative study. This design is particularly useful when a researcher needs to embed a qualitative component within a quantitative design, as in the case of an experimental or correlational design.

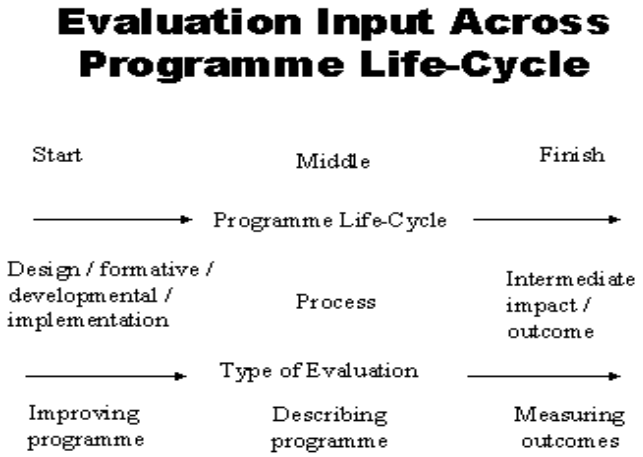
3. Explanatory Design

The overall purpose of this design is that qualitative data helps explain or build upon initial quantitative results (Creswell, Plano Clark, et al., 2003). This design is well suited to a study in which a researcher needs qualitative data to explain significant (or non-significant) results, outlier results, or surprising results (Morse, 1991). This design can also be used when a researcher wants to form groups based on quantitative results and follow up with the groups through subsequent qualitative research (Morgan, 1998; Tashakkori & Teddlie, 1998) or to use quantitative participant characteristics to guide purposeful sampling for a qualitative phase (Creswell, Plano Clark, et al., 2003).

4. Exploratory Design

This design starts with qualitative data, to explore a phenomenon, and then builds to a second, quantitative phase. Researchers using this design build on the results of the qualitative phase by developing an instrument, identifying variables, or stating propositions for testing based on an emergent theory or framework. These developments connect the initial qualitative phase to the subsequent quantitative component of the study. Because the design begins qualitatively, a greater emphasis is often placed on the qualitative data.

Types of Program Evaluation & Steps in Program Evaluation



Basic categories of education evaluation in relation to one another:

"Education evaluation is the process of information gathering and treatment necessary to make a decision for an education program." Cronbach (1984):

Process or formative evaluation is done to make adjustments in an educational activity as soon as they are needed. It is an ongoing component of assessment planning and implementation. The purpose of content evaluation is to determine whether learners have acquired knowledge or skills taught during learning. The scope of outcome evaluation is limited to a specific learning experience and to specifically stated objectives for that experience. Outcome or summative evaluation is done to determine the effects of teaching efforts. Process evaluation occurs concurrently with teaching but outcome evaluation occurs after teaching. Outcome evaluation focuses on a longer period than content evaluation. The scope of Outcome evaluation depends on the changes being measured which in turn depends on objectives established (content

evaluation). The purpose of Impact evaluation is to obtain information that will decide whether continuing an educational activity is worth its cost.

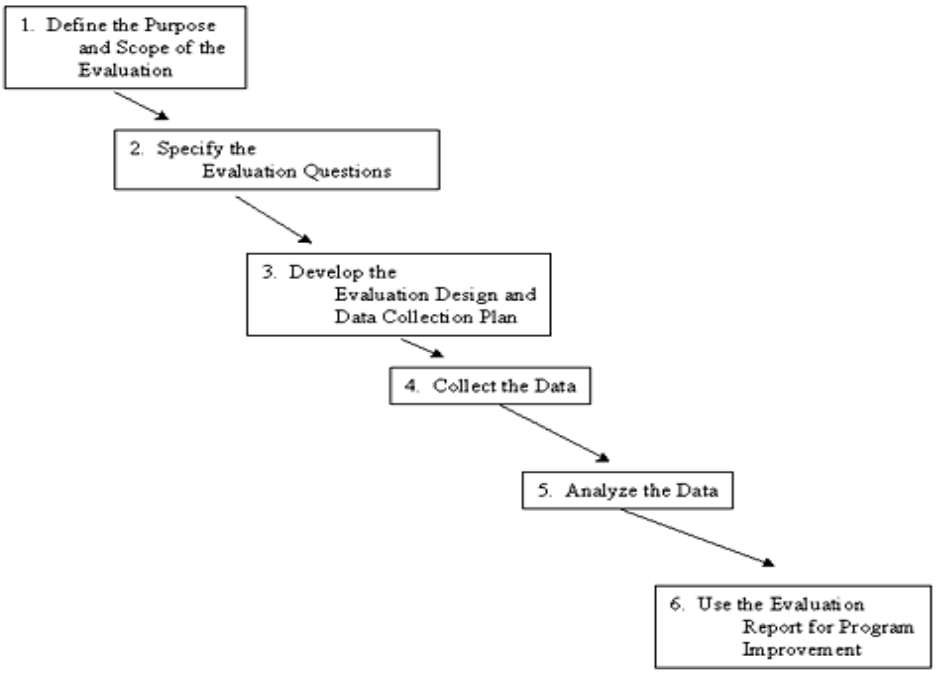
Steps in Program Evaluation [57]:

Step 1: Defining the Purpose and Scope of the Evaluation

Defining its purpose includes deciding on the goals and objectives for the evaluation, and on the audience for the evaluation results. The evaluation goals and objectives may vary depending on whether the instructional program or curriculum being evaluated is new and is going through a try-out period for which the planning and implementation process needs to be documented, or if a curriculum has been thoroughly tested and needs documentation of its success before information is widely disseminated and adoption by others encouraged. Depending on the purpose, the audience for evaluation may be restricted to the individual teacher, and school staff member, or may include a wider range of individuals, from school administrators to planners and decision,makers at the local, state, or national level.

The scope of the evaluation depends on the evaluation's purpose and the information needs of its intended audience. These needs determine the specific components of a program which should be evaluated and on the specific project objectives which are to be addressed. If a broad evaluation of a curriculum has recently been conducted, a limited evaluation may be designed to target certain parts which have been changed, revised, or modified. Similarly, the evaluation may be designed to focus on certain objectives which were shown to be only partially achieved in the past. Costs and resources available to conduct the evaluation must also be considered in this decision.

Exhibit 1
Steps in The Evaluation Process



Step 2: Specifying the Evaluation Questions

The evaluation questions will be structured to address the needs of the specific audience to whom the evaluation is directed. Evaluation questions should be developed for each component which falls into the scope which was defined in the previous step.

A good way to begin formulating evaluation questions is to carefully examine the instructional objectives; another source of questions is to anticipate problem areas concerning teaching the curriculum. Once the evaluation questions are developed, they should be prioritized and examined in relation to the time and resources available. Once this is accomplished, the final set of evaluation questions can be selected.

Evaluation Questions and Methods

Evaluators ask many different kinds of questions and use a variety of methods to address them. These are considered within the framework of formative and summative evaluation as presented above [36].

In formative research the major questions and methodologies are:

1. What is the definition and scope of the problem or issue, or what's the question?
2. Where is the problem and how big or serious is it?
3. How should the program or technology be delivered to address the problem?
4. How well is the program or technology delivered?

The questions and methods addressed under summative evaluation include:

1. What type of evaluation is feasible?
2. What was the effectiveness of the program or technology?
3. What is the net impact of the program?

Logic Model:

A logic model describes the sequence of events for bringing about change by synthesizing the main program elements into a picture of how the program is supposed to work. Logic models summarize the program's overall mechanism of change by linking processes (e.g., laboratory diagnosis of disease) to eventual effects (e.g., reduced tuberculosis incidence). The logic model can also display the infrastructure needed to support program operations. Elements that are connected within a logic model might vary but generally include inputs (e.g., trained staff), activities (e.g., identification of cases), outputs (e.g., persons completing treatment), and results ranging from immediate (e.g., curing affected persons) to intermediate (e.g., reduction in tuberculosis rate) to long-term effects (e.g., improvement of population health status). Creating a logic model allows stakeholders to clarify the program's strategies; therefore, the logic model improves and focuses program direction.

Descriptions of Three Approaches to Logic Models**:**

A program is a theory and an evaluation is its test. In order to organize the evaluation to provide a responsible test, the evaluator needs to understand the theoretical premises on which the program is based Carol Weiss (1998)

Which Fits Your Program?

1. ***Theory Approach Models*** emphasize the theory of change that has influenced the design and plan for the program. These logic models provide rich explanation of the reasons for beginning to explore an idea for a given program. These models illustrate how and why you think your program will work.

2. ***Outcomes Approach Models*** focus on the early aspects of program planning and attempt to connect the resources and/or activities with the desired results in a workable program. These models often subdivide outcomes and impact over time to describe short-term (1 to 3 years), long-term (4 to 6 years), and impact (7 to 10 years) that may result from a given set of activities.

3. ***Activities Approach Models*** pay the most attention to the specifics of the implementation process. A logic model of this type links the various planned activities together in a manner that maps the process of program implementation.

Step 3: Developing the Evaluation Design and Data Collection Plan

This step involves specifying the approach to answering the evaluation questions, including how the required data will be collected. This will involve: specifying the data sources for each evaluation question; specifying the types of data, data collection approaches, and instruments needed; specifying the specific time periods for collecting the data; specifying how the data will be collected and by whom; and specifying the resources which will be required to carry out the evaluation.

The design and data collection plan is actually a roadmap for carrying out the evaluation. An important part of the design is the development or selection of the instruments for collecting and recording the data needed to answer the evaluation questions. Data collection instruments may include record,keeping forms, questionnaires, interview guides, tests, or other assessment measures. Some of the instrumentation may already be available, i.e., standardized tests. Some will have to be modified to meet the evaluation needs. In other cases, new instruments will have to be created.

Choosing appropriate instrumentation (surveys, questionnaires, etc.) is a vital part of conducting good quality empirical research and evaluation. A thorough search and evaluation of all possible measures is recommended. Time spent critical reviewing possible instruments is time well spent [76].

Key factors to consider are:

(i) Length & complexity: Is the instrument appropriate for the participants?
(ii) Match between program objectives and the instrument
(iii) Sensitivity: Has the instrument been built with a view to being used for assessing what you want to measure, e.g., change?
(iv) Specificity: The greater the specificity of a measure, the more likely it is to predict actual performance (Blau, 1993).

(v) Reliability and Validity: Has the reliability and validity of the instrument been well established via peer-reviewed publication? Do you understand the strengths and limitations of the instrument?
(vi) Ethical/Educational Issues: If possible, can the instrument be used not only for the interests of the researcher, but also in the education/development of participants? For example, a self-assessment tool could be used not only for research purposes but also to lead onto a goal-setting and feedback session with participants.

In designing the instruments, the relevance of the items to the evaluation questions and the ease or difficulty of obtaining the desired data should be considered. Thus, the instruments should be reviewed to ensure that the data can be obtained in a cost-effective manner and without causing major disruptions or inconveniences to the class.

In analyzing if the tools and the methods of program evaluation are same or different, a Working Review on "Assessment Methods and Measurement Instruments" (August 2001), has stated that the first step in making choices of measurement instruments is to determine the purpose and desired content of evaluation, as it is important to choose the measurement methods that are congruent with the evaluation questions. The choice of measurement methods and construction of measurement instruments is a crucial step in the evaluation process because it determines the data that will be collected. The methodological rigor with which the instruments are constructed and administered affects the reliability, validity, and cost of the evaluation [77].

Step 4: Collecting the Data

Data collection should follow the plans developed in the previous step. Standardized procedures need to be followed so that the data are reliable and valid. The data should be recorded carefully so they can be tabulated and summarized during the analysis stage. Proper record-keeping is similarly important so that the data are not lost or misplaced. Deviations from the data collection plan should be documented so that they can be considered in analyzing and interpreting the data.

Step 5: Analyzing the Data and Preparing a Report

This step involves tabulating, summarizing, and interpreting the collected data in such a way as to answer the evaluation questions. Appropriate descriptive measures (frequency and percentage distributions, central tendency and variability, correlation, etc.) and inferential techniques (significance of difference between means and other statistics, analysis of variance, chi-square, etc.) should be used to analyze the data. An individual with appropriate statistical skills should have responsibility for this aspect of the evaluation.

The evaluation will not be completed until a report has been written and the results communicated to the appropriate administrators and decision,makers. In preparing the report, the writers should be clear about the audience for whom the report is being prepared. Two broad questions need to be considered: (1) What does the audience needs to know about the evaluation results? and (2) How can these results be best presented? Different audiences need different levels of information. Administrators need general information for policy decision-making, while teachers may need more detailed information which focuses on program activities and effects on participants.

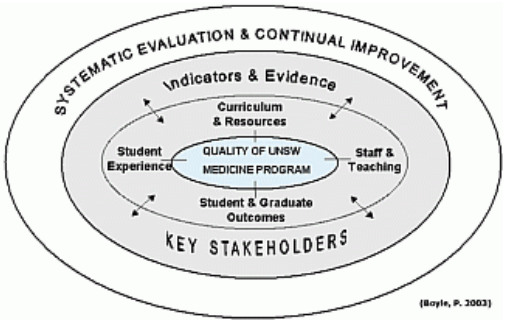
Step 6: Using the Evaluation Report for Program Improvement

The evaluation should not be considered successful until its results are used to improve instruction and student success. After all, this is the ultimate reason for conducting the evaluation. The evaluation may indicate that an instructional activity is not being implemented according to plan, or it may indicate that a particular objective is not being met. If so, it is then the responsibility of teachers and administrators to make appropriate changes to remedy the situation. Schools should never be satisfied with their programs. Improvements can always be made, and evaluation is an important tool for accomplishing this purpose.

Program Evaluation & Improvement Group (PEIG)

PEIG facilitates the development of holistic, integrated, and systematic processes for the evaluation and improvement of the Faculty of Medicine's educational programs through the following enablers[72]:

Systems	To improve the quality of the student learning, and teaching environments
Processes	For evaluation and improvement incorporating evidence-based approaches to quality and quality improvement
Rewards	Incentive and recognition programs for staff for quality in teaching and contribution to the Program.



Developing a Multicomponent Model to Evaluate Program Quality

A review on PEIG (Kathryn A. Gibson 2008) revealed that to develop a comprehensive evaluation process, a Program Evaluation and Improvement Group (PEIG) was established by the Dean of medicine with the members comprising of senior campus-based academics, clinical academics based in teaching hospitals, the director of the university's Quality System Development Group, who augmented the group's expertise in educational measurement and evaluation, and a full-time senior project officer whose salary was funded by the Dean's office. Evaluation process should also seek to develop explicit and systematic means for fostering and recognizing the commitment of faculty and professional staff to the continuing improvement of the program[80]. It will be of great value if our Medical Education Unit also includes such a Program Evaluation and Improvement Group in future.

Program Evaluation and Review Technique

The Program (or Project) Evaluation and Review Technique, commonly abbreviated PERT, is a network programming method developed in 1950's primarily used for large scale projects that require planning , scheduling and controlling large number of activities. PERT involves concepts of **time and events**.

Events:

The basic tool is the network or flow plan which is a series of circles , ovals , squares representing program events or goals and their relationships with activities of the program(terms used- goals and activity).

Activities:

They are the time consuming events of the program usually represented by arrows that connect goals/events. In a flow plan it may take several activities

to attain a program event or goal and some events must be accomplished before other events must be attained.

Time:

It is another element of PERT is the estimate of time it will take to implement activities leading to goals.

Three estimates of activity time are given

- **Optimistic time** to complete activities given minimal difficulties
- **Most likely time** with normal difficulties
- **Pessimistic time** with maximal difficulties.

From time a simple formula is applied to indicate the probability of completing a project in a given time.

PERT planning involves the following steps[64]:

1. Identify the specific activities and milestones

2. Determine the proper sequence of the activities

3. Construct a network diagram

4. Estimate the time required for each activity

5. Determine the critical path.

6. Update the PERT chart as the project progresses

Critical Path Method (CPM) is a technique or element of PERT. It focuses the program planners' attention on the program activities, the sequencing of activities for best use of time and resources and estimated time to complete from beginning to end. It allows for frequent review of progress and problems can be identified early in program implementation. PERT and CPM rationalize the central tasks of project management—forecasting the completion date of projects, while coordinating resource allocations to maximize efficiency and effectiveness [65].

Benefits of PERT [64].

It provides the following information:

- Expected project completion time.
- Probability of completion before a specified date.
- The critical path activities that directly impact the completion time.
- The activities that have slack time and that can lend resources to critical path activities.
- Activity starts and end dates.

How and where to use these complex tools in educational projects?

Along with the discussion of concept of PERT, there was a query if PERT can be used in evaluating efficiency of faculty development programs, mentorship program efficiency, FAIMER efficiency etc., and the following gave the evidence for it.

Several models are presented to illustrate areas in which PERT can be applied to educational research and development projects--(1) experimental research, (2) survey research, (3) historical research, (4) developmental projects, (5) curriculum development, (6) educational service projects, (7) research integration projects, and (8) theory development projects. [66]

The PERT (Program Evaluation and Review Technique), a network planning method, was applied to clinical practice of lung cancer patients and the PERT chart of the process was revealed to evaluate improvement in quality of medical practice. Evaluation of the change in the clinical practice was assessed by comparing the clinical practice of 7 years later. The usefulness of the PERT in evaluation of clinical process efficiency was shown. PERT can be more effective method for this purpose if the data derived from order-entry system is appropriately provided to the PERT analysis .[67]

The coding and supervision requirements related to both simple and complex pulmonary stress testing were reviewed. A program evaluation and review technique diagram has been used to describe the work flow process which identifies the time dimensions of the process, including the factors that can cause variations in the time for each step.The PERT diagram included a critical path. The variations in start and stop times of each step were explained by circumstances that result in slack times that are identified in alternative and subsidiary pathways of the chart .[68]

Program Evaluation Standards and Practice

Standards for Effective Evaluation

The Joint Committee on Standards for Educational Evaluation has developed program evaluation standards for this purpose. These standards, designed to assess evaluations of educational programs, are also relevant for public health programs.

- The program evaluation standards make conducting sound and fair evaluations practical.
- The standards provide practical guidelines to follow when having to decide among evaluation options.
- The standards help avoid creating an imbalanced evaluation (e.g., one that is accurate and feasible but not useful or one that would be useful and accurate but is infeasible).
- Furthermore, the standards can be applied while planning an evaluation and throughout its implementation.

The Joint Committee is unequivocal in that, "the standards are guiding principles, not mechanical rules. . . . In the end, whether a given standard has been addressed adequately in a particular situation is a matter of judgment".

In the Joint Committee's report, standards are grouped into the following four categories[58]:

- Utility,
- Feasibility,
- Propriety, and
- Accuracy.

Standard 1: Utility

Utility standards ensure that information needs of evaluation users are satisfied. Seven utility standards address such items as identifying those who will be impacted by the evaluation, the amount and type of information collected, the values used in interpreting evaluation findings, and the clarity and timeliness of evaluation reports.

Standard 2: Feasibility

Feasibility standards ensure that the evaluation is viable and pragmatic. The three feasibility standards emphasize that the evaluation should employ practical, nondisruptive procedures; that the differing political interests of those

involved should be anticipated and acknowledged; and that the use of resources in conducting the evaluation should be prudent and produce valuable findings.

Standard 3: Propriety

Propriety standards ensure that the evaluation is ethical (i.e., conducted with regard for the rights and interests of those involved and effected). Eight propriety standards address such items as developing protocols and other agreements for guiding the evaluation; protecting the welfare of human subjects; weighing and disclosing findings in a complete and balanced fashion; and addressing any conflicts of interest in an open and fair manner.

Standard 4: Accuracy

Accuracy standards ensure that the evaluation produces findings that are considered correct. Twelve accuracy standards include such items as describing the program and its context; articulating in detail the purpose and methods of the evaluation; employing systematic procedures to gather valid and reliable information; applying appropriate qualitative or quantitative methods during analysis and synthesis; and producing impartial reports containing conclusions that are justified.

Potential Benefits of Program Evaluation

Evaluation can help one improve programs by

Decision Making

Evaluation can help one make better decisions about program direction.

- Setting goals and priorities
- Reviewing goals and priorities

Evaluation can help one make better decisions about allocation of resources.

- Determining the value of programs
- Allocating resources to programs
- Improving program design
- Improving program implementation
- Improving program cost-effectiveness

Knowledge and Skills

Evaluation can increase understanding of the program being evaluated

Evaluation can build knowledge about existing/potential needs and about programming that addresses those needs.

- Increasing knowledge of needs and problems
- Increasing knowledge of effective practices and programs
- Increasing knowledge of programming

Evaluation can develop capacity for effective program design, assessment, and improvement.

- Learning to think more critically about programs
- Improving attitudes toward evaluation
- Developing capacity to understand, use, and/or conduct evaluation

Social Change

Evaluation can be used to promote, defend, or oppose specific methods, approaches, or programs.

Evaluation can be used to shape public opinion.

Accountability

Evaluation can support accountability for program performance and spending.

- Providing information for stakeholders
- Meeting the requirements of funding agents

Cohesion and Collaboration

Evaluation can increase consistency and communication between departments or organizations.

Evaluation can build energy and enthusiasm within the program team

- Building pride and confidence
- Building cohesion and enthusiasm

Challenges to Program Evaluation and Accountability

The demand for documenting outcomes of extension programs continues to increase. Rama Radhakrishna examined the challenges to program evaluation and accountability and has categorized the challenges into two levels--macro level (national) and micro level (grass roots or state level) [78].

Macro Level Challenges

1. The changing world
2. Heightened concern for relevance of Extension programs
3. Greater demand to determine "impact" or "outcomes of programs
4. Demand for greater accountability and changing accountability systems
5. The information explosion

Micro Level Challenges

1. Emphasizing evaluation procedures and criteria up-front
2. Evaluation stops at the lower level of Bennet's hierarchy
3. Extensive reliance on single method of program evaluation
4. Limited skills in interpreting evaluation results
5. Philosophical roles of Extension agents
6. Reporting evaluation and accountability results

Communication, teamwork, and use of technology in program evaluation and accountability becomes increasingly important as we look at opportunities in the new millennium.

Barriers to Evaluation

The following were learnt as the barriers to program evaluation:

- Lack of skills and expertise for conducting effective impact evaluations
- Limited resources
- Lack of administrative support
- Non-acceptance of the evaluation process and non-cooperation of co-workers
- The amount of money it costs to conduct an evaluation.
- Fear of consequences
- Burden on staff
- Time Constraint

One among the barriers to evaluation implementation was 'human factors'. The respondents' focus was on 'evaluator's social competence and program staff's lack of trust in evaluators and evaluation process'. In order to avoid barriers to evaluation implementation, create a trusting relationship with those affected by the evaluation through continuous participation and communication, and to conduct carefully planned, methodologically appropriate evaluations [16]."

Missing Incentives to Program Review/ Evaluation:

Possible issues related to program reviews/incentives:

- Institutional Research data often perceived as worthless
- No direction or guidance from administration or from the Faculty Senate in conducting these reviews
- No feedback upon completion
- Deans are not part of process
- No office or administrator or time table identified for implementation of recommendations
- No consequences either positive or negative at the conclusion; no rewards are given to departments that conduct program reviews, evaluations

Overcoming Barriers

- Collaboration is the key to successful program evaluation. A participatory approach to evaluation based on respect for one another's roles and equal partnership in the process overcomes barriers to a mutually beneficial evaluation (Burt, Harrell, Newmark, Aron, & Jacobs, 1997; Chalk & King, 1998).
- Identifying an evaluator with the necessary technical skills as well as a collaborative approach to the process is integral. Selecting an evaluator entails finding an individual who has an understanding of the program and funding requirements for evaluations, demonstrated experience, and knowledge of the issue that the program is targeting (CDC, 1992).

Awareness and applications of Program Evaluation in Indian set up

Program evaluation and evaluability assessment review emphasized on the adopting a comprehensive evaluation to evaluate the inputs, the process, the outcome and the impact, on short term and long term basis. India CLEN Program Evaluation Network – IPEN has expanded recently and has many partners from state medical colleges.

Program Evaluation and Evaluability Assessment:

Program evaluation is a systematic effort which runs throughout the program, right from its inception, through planning, implementation, assessment of outcome at the end of the program, and assessment of impact after the program. Evaluability assessment is a method for examining a program prior to conducting other definitive evaluation activities. An evaluability assessment provides an early opportunity to review program history, and describe actual program activities. Thus, it helps to identify key stakeholders, clarify evaluation questions, and adopt appropriate method of evaluation based on the program realities and constraints of resources and time. In some cases, it serves as a formative evaluation in itself and may generate sufficient information for stakeholders to fine-tune a program at its early stage.

The evaluability study conducted with regard to the medical educational technology program conducted at All India Institute of Medical Sciences (AIIMS), New Delhi has brought to the focus the need for sharpening program evaluation. There is need for asking the right type of questions, and to administer the right kind and combination of tools to gather information with a view to take decision alternatives. There is a case for adopting a comprehensive evaluation to evaluate the inputs, the process, the outcome and the impact, on short term and long term basis. These strategies are bound to be useful in strengthening future programs conducted by the Center. At the same time, they are likely to provide a new insight into the issue of evaluation of similar programs conducted by other agencies under similar circumstances [59].

The steps in the evaluability assessment process can include:

- Reviewing materials that define and describe the intervention
- Identifying any modifications to the implemented intervention from that which was originally planned
- Interviewing intervention managers and staff about the goals and objectives
- Interviewing stakeholders
- Developing an evaluation model
- Identifying sources of data
- Identifying people and organizations that can implement any possible recommendations from the evaluation.

Integrated Learning Program:

An integrated approach to teaching medical subjects is an effective educational strategy. Yet, this has not become popular in medical colleges in India. An integrated learning programme to teach the gastrointestinal system in the first year of the medical course was evaluated.

A questionnaire was developed for students to evaluate various aspects of the programme. This was administered to them at the end of the 3-week period of the ILP. The students also did a self assessment of their study habits during the period of the ILP. Similarly, the faculty members, who had participated in the ILP, also evaluated various aspects of the programme at the end of 3 weeks. The average marks obtained by each student in the class tests in the 3 subjects before the start of the ILP, were compared with their scores in the ILP knowledge test to compare their performance level before and after the introduction of this programme. Most of the faculty members and students recommended that the integrated programme should be continued and extended to other parts of the curriculum. An integrated learning programme is feasible within a conventional medical curriculum of an Indian medical college [60].

India CLEN (Clinical Epidemiology Network) Program Evaluation Network:

The evaluation of major health programs by IndiaCLEN was initiated in 1997. During the last nine years, the IndiaCLEN Program Evaluation Network (IPEN) has expanded to 84 partners spread across almost every Indian state. These partners are mostly academia from state medical colleges; six NGOs actively participating in health are also members.

IPEN has undertaken the major nationwide evaluation studies since 1997. This includes evaluation of Pulse Polio Immunization (PPI) program, Family Health Awareness Campaign (FHAC), Vitamin-A and Iron folic acid supplementation programs, existing disease surveillance program and perceived barriers among health providers and clients; assessment of Injection practices in India and Evaluation of universal immunization program. USAID is the key partner to IPEN's activities, but we have been able to attract funds from WHO, MI-IDRC, World Bank and Ministry of Health-Government of India. The recommendation arising out of these studies were highly valued and well received by policy makers and program managers at various levels [61].

Accreditation of Public Health

Accreditation of educational institutions is seen as a means for improving the quality of educational programmes. The institution should establish a mechanism for program evaluation, and ensure that basic data about public health programme is available through monitoring of curriculum and student progress, and ensure that program evaluation addresses identified concerns[63].

In a Nutshell ...

- A programme evaluation covers a specific programme as a whole, or selected aspects thereof.
- Program evaluation emphasizes both educational processes and outcomes.
- Program evaluation should start with assessments of the first evaluation level (Kirkpatrick) and then, within practically achievable limits, continue with the second through fourth levels.
- A needs assessment, one of the important dimensions of the Program Evaluation is a systematic process to collect and analyze information on what a target group needs to learn.
- Needs assessment should be conducted before any adult educational activity so that the available resources can be used to the maximum benefit of the learners.
- From educational point of view, the term **assessment** is reserved/ restricted to individual students (though in India we call it student evaluation) who are beneficiaries of educational programs and **evaluation** to evaluation of programs / courses/ rotations/ curricula or the learning experiences or programs the students go through (program evaluation).
- A good evaluation often will combine the two types of evaluation (Quantitative & Qualitative), unless there are clear limitations or restrictions due to skills of personnel involved or a cost-or time-factor to be observed.
- It will be of great value if every Medical Education Unit includes a Program Evaluation and Improvement Group which uses a Program (or Project) Evaluation and Review Technique.
- The Joint Committee on Standards for Educational Evaluation has developed program evaluation standards for Educational Evaluation which not only assesses the evaluations of educational programs but is also relevant for public health programs.
- Collaboration is the key to successful program evaluation. A participatory approach to evaluation based on respect for one another's roles and equal

partnership in the process overcomes barriers to a mutually beneficial evaluation.

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"Do what you can, where you are, with what you have."
~ Theodore Roosevelt

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ANNEXURE

DISCUSSION QUESTIONS & RESULTS

SURVEY ON THE AWARENESS AND PROCESS OF IMPLEMENTATION OF PROGRAM EVALUATION IN MEDICAL EDUCATION

Total of 28 responses were received (but 1 or 2 responses were missing for individual questions.)

Question 1:

When did you first become aware of program evaluation as a formal procedure?

- 78% have stated that they first became aware because of training outside institution of which 33% are after joining FAIMER.
- Only 19 % due to institutional training.

  - Training programs are definitely doing a good job
  - Institutional level improvement is greatly needed.

Question 2:

In your opinion what is the percentage of faculty members in your institute who are aware of program evaluation?

- This question has got a varied response but more than 50% are of the opinion that the total awareness is less than 25% for all(pre, para, clinical and admimistrative)

- The general opinion is that and administrative faculty are better aware of program evaluation.

Clinical faculty have the least awareness.

- Awareness in teaching staff should be increased
- It should be realized that Program evaluation is not only for administrative work

This being just an opinion survey is it worthwhile to actually conduct a survey to find the actual awareness or is it enough to assume that the opinion of 50% is fairly correct and continue with ways to improve the awareness. Please give your suggestions.

Question 3:

If, in an institute the total awareness of program evaluation is < 25%, list according to your priority in whom the awareness should be increased first?

On an average 80% have opted for teaching faculty and MEU members to be trained first with the administrative faculty and regulatory bodies coming next. Training university has got the least response.
Suggestions needed - Why do you think universities and regulatory bodies are not given priority in this case.

Question 4:

In your opinion, in the field of medical education, what are the reasons for the lack of awareness on program evaluation in India when compared with developed countries?

The list of reasons is

- Lack of accountability
- Lack of commitment
- Lack of medical education unit in institutions
- Inadequate training programmes
- Failure of implementing existing methods effectively
- Reluctance to learn, we only do our duty without looking at the results
- The purpose of PE is not understood
- Not associated with promotion or academic excellence
- Medical education research itself is not accorded any importance
- Non acceptance to change i.e Tendency to follow traditional way because "that is the way it is always done"
- There is no supportive environment and work culture
- Lack of periodic CME-type of capacity building workshops
- Lack of exposure and lack of knowledge of areas of use of PE
- Not being made compulsory
- Lack of motivation
- Attitude towards the research
- No involvement of administration, Callousness of administrators and universities

Question 5:

If an institute is already aware of program evaluation do you think,

a) **It should be implemented as a routine program for MBBS and PG courses.If yes how frequently should it be done. if no why?**
   93 % have responded either as strongly agree or agree.
   Frequency ranges from 6 months to 5 years.

b) **Before implementation is training important?**
   - 95 have agreed / strongly agreed that there should be training.

Question 6:

What do you feel about the uniformity of conducting program evaluation of MBBS and PG courses in the various Medical colleges in India? (For example using a questionnaire for evaluating knowledge of interns.)

- There was an equally divided response between - all colleges in India and all colleges in a university (approx -35% each)
- Very few feel that individual colleges should have their own evaluation patterns.

Question 7:

Do you think program evaluation of a medical institution should be done by an outside consulting agency or should it be an intra institutional affair.?

- Most of the responses were either for – trained faculty within the institute (40%)or
  for faculty within institute but with outside supervision (33%)
- Only 10 to 20% have opted for - full outside agencies or for nontrained faculty with supervision by faculty within institute.

Question 8:

a) What is the percentage of teaching staff who evaluate their performance informally(like orally asking students how they teach etc)

- 50% feel that there is some amount of informal evaluation

b)How many of them use formal evaluation as a tool to document impact of their teaching and for promotions (like students assessment of teacher by feedback questionnaire) ?

- 70% of responses were of the opinion that formal evaluation is less than 25 %
- Few have suggested that it depends on the institution.

Question 9:

In your opinion what are the reasons/ benefits of implementing program evaluation in medical education?

List in order of priority

- Drawbacks can be identified and reforms can be initiated
- Improved quality and standard of education medical education
- Enhances effectively of program
- It will improve the image and performance of institution
- For meeting the objectives of medical education
- To have a progressive innovation in the program Improving teaching learning cycle
- The ultimate goal of improving the quality of doctors passing out is achieved improvement in performance, which helps meet/match the health needs of the community
- Increase the teaching level
- Helps in the performance appraisals of faculty
- Foster educational research
- More benefit passed on to students
- To maintain organized way of doing
- Reduce unnecessary work
- Identifies problems in timely manner and helps corrective action
- As baseline for further evaluations
- Introspection
- To ensure consistency (MBBS and MD/MS Graduates)
- Rectify the weakness of students and the teachers as well
- To revise and modify the indicators as time pass by

Question 10:
Give your opinion on the following:

a) **What needs to be done to promote the habit of program evaluation among medical educators in an institution**?

- Self motivation by attending training workshops and being aware of benefits of program evaluation

- Conduct workshop
- On regular basis once a year evaluation can be done
- Identify the evaluating external agencies
- Awareness ,training , university can certify
- Program evaluation can be made mandatory during subsequent inspection for approval of education/ college.
- Certifying bodies can suggest like how frequently it needs to be done.
- Give some credit - It may be linked to promotion and some incentives, Incorporate into Performance appraisals and to academic & portfolio achievement.
- It needs to be made mandatory for all the institutions initially. Training need to be given for all the faculty and administrators for PE. Once they are trained, then the PE can be done regularly.
- Create awareness first, involve those who are interested to create the plan and interact with all the stakeholders about the plan and finalize before implementing.
- The Medical Education Unit/Department should conduct regular capacity building programmes for faculty in Medical Education Research on among other things, Programme Evaluation.

b) Role of certifying bodies like ISO, NACC in program evaluation if any

- ISO and NAAC can suggest guidelines and bring 'Best Practices' to the attention of MEUs.
- Certifying bodies can be established to consider the recommendations received from evaluations from all Institutions to initiate changes as required.
- Accrediting bodies have made this easier by making documentation of the above mandatory
- The role of ISO , UGC , NACC is good in PE
- ISO can have a standardized format for the evaluation
- ISO is OK. But based on Quality system procedure which we commit. That may not be uniform for all institutes. moreover, it is not explicit to the consumers like students or parents of students
- Definitely the certifying bodies help in promoting the habit of PE
- Yes, ISO, NACC have a way of doing program evaluation. The difference is they evaluate the process of implementation and customer satisfaction. But in PE, evaluation need to done on the basis of set objectives.

- If followed strictly these bodies may play an important role, but parents look how much to pay and students looks how easily they pass, management looks how smoothly they manage with higher benefit. Definitely most faculties want to remain free from these evaluations. These certifying bodies like ISO, NACC are only paper tigers without any power to implement.
- The accreditation body has an important role to play but QAA certification from ISO, NACC would be beneficial to internalize PE with standard operation procedures (SOPs).