'Being a Competent Medical Teacher'

BLDE Deemed to be University
Shri B. M. Patil Medical College Hospital and Research Centre Vijayapura
Medical Education Unit

Editor

Dr Tejashwini Vallabha

mahi Publication

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1 SYSTEM APPROACH TO MEDICAL EDUCATION

Dr. Vidya A. Patil Professor, Anaesthesiology, BLDE(DU)Shri B.M.Patil. Medical College, Hospital and Research Centre, Vijayapura

What is a system?

In a layman's language it is a collection of organized things working together. Ex – The Solar system.

All the planets, stars, sun & moon work in tandem to produce day & night, different seasons, climate & weather changes.

Thus, a system is a conglomeration of a set of interacting, inter related & interdependent components (subsystems). The functioning of these subsystems is synergistic, orderly & in harmony. They work towards achieving common goal/goals.

Input → Process → Output

If the same understanding is extrapolated or deduced in a medical college, then that medical college is a conglomeration of functioning subsystems i.e. departments which work in tandem. They are interdependent, interrelated & work towards a common goal of producing competent qualified medical professionals.

Learner → Process Competent, qualified, medical ProfessionalSystems are of 2 types –

1. Open System, 2. Closed System.

Open System:
It is open to changes. It adapts to changes in the environment it exists & is functioning.

ex – a running car is subject to changes like humps & bumps, curve & other vehicles on the road.

Closed System:
It is the one which will not respond to changes in the environment, ex- a Diwali rocket (cracker) once ignited it will just strike in the air & burst.

The systems environment can be conducive or nonconductive (congenial/ noncongenial) i.e. favorable or unfavorable & this can affect the outcome.

Input → Process → Output
a) Expected. ↘ b)Actual.
↑
Conducive/ Nonconducive environment.

The output can be expected one or actual (which is different)

When an Education system is open to changes, it is influenced by external factors which constitute the system environment of the college. The social, political & economic factors constitute the system environment of the college. These factors produce conducive or non-conducive environment that helps or hinders its functioning & thereby influence the character and quality of the medical professional produced.

Let us expand this equation, 'Input → Process → Output',

Further, in relation to medical education, and understand what is the input?, what constitutes the process?, & what are the factors that determine the characters of the output?.

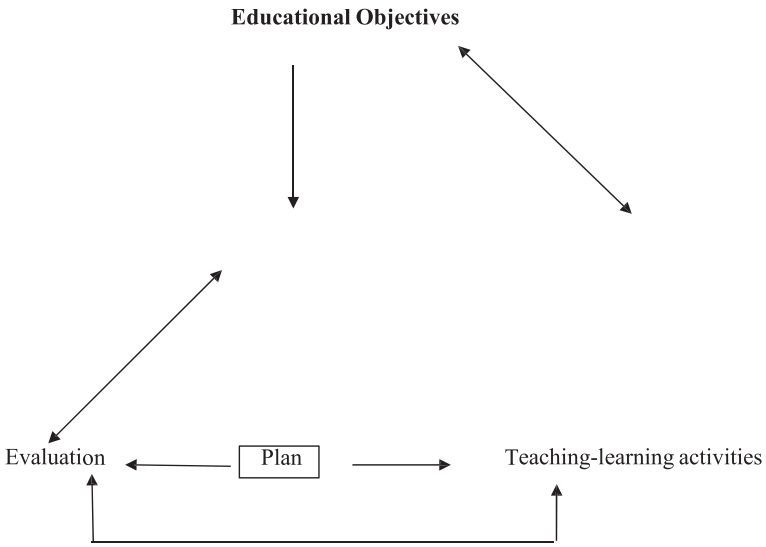
INPUT:
1. **The Learner.**
2. **The teaching-learning resources**

a) Human resource (Man) - M
b) Hardware & Software (Material) - M
c) Finance (Money) - M
d) Time (minutes) - M

PROCESS –

The education process is cyclical & consist of three steps.

a) Formulating aims & objectives.
b) Planning & implementing the teaching-learning process.
c) Planning & implementing a scheme of evaluation of the outcome of learning.



Educational Spiral

a) Aims & objectives –

These are based on the output specifications, i.e the expected characteristic of a medical professional passing out of the college. Therefore these objectives are learner oriented & not teacher oriented.

b) Planning & implementation of the teaching-learning process-

This will depend upon resources available in terms of curricular time, faculty strength & experience, teaching-learning resource material & funds.

c) Planning & implementing evaluation

It is based on its purpose--summative/formative/ practicals or theory, & the objectives to be achieved by the learners. Based on the evaluation of the 'products' (learners at the end of the study period), we can get an idea of the actual quality of the outcome of the educational processThe two-way arrows of this spiral indicate that there is mutual feedback & influence of one component over the other. For instance if it is not possible to give an adequate teaching-learning experience as adjudged by evaluation, then the objective need to be reconstructed or the teaching-learning activity needs to be improved upon.

The relationship between the three components is best depicted as a spiral & not a closed circle to show that there is a continued scope for improvement & revision of old objectives depending on the requirements of the process & the feedback obtained from earlier cycles.

OUTPUT:

The output aimed at is qualified, certified, competent health professional to provide health care in the community. If a learners competency is less than expected, he/she will not be certified as a qualified professional.

YARDSTICKS OF A GOOD EDUCATION SYSTEM:

1. Effectiveness of the system:

If the actual outcome matches the output specifications then the process has been quite effective in achieving the desired outcome. However if there is gross discordance between the two (i.e if most of the graduates are not competent to practice as primary health care physicians) then the education process has been ineffective.' Effectivenesof a system, therefore, indicates the extent to which the desired outcome has been achieved. It is the measurement of the quality of the output.

2. Efficiency of the system :

It depends upon the cost, time & resources spent to achieve the output. A college that spends Rs 100 crores per year to educate 50 learners is less efficient than one that spends Rs 10 crores to educate 100 learners, provided the qualities of the out puts are similar. Efficiency relates to the quantity while effectiveness relates to the quality of the outcome.

3. Openness of a system

An open system responds to the environment & the outcome. If the effectiveness or efficiency is found to be unsatisfactory, then an open system will revise the whole process of education (objectives, teaching-Learning activities, and evaluation) so that the subsequent process-cycles perform better. On the other hand a closed system is non- responsive or so slowly responsive that it appears to be non-functional.

An ideal process of education is not a closed cycle but a spiral. Feedback evaluation is done, every time a batch of students complete their education & exit the system.

Based on the feedback from various sources (students, teachers, public i.e patients, academicians etc), suitable changes are made in the educational process for subsequent batches of students.

A responsive self-correcting open system is bound to succeed in its performance **with teachers as the fundamental supporting core structures of an institution.Importance of Systems Approach for Education:**

1. Provides framework for planning, implementing plans.
2. Provides a unified focus to institutional efforts.
3. Helps to look at institution as a whole and not as parts.
4. Helps the manager to identify critical or problem shooting subsystems and take necessary steps to set them right.
5. Helps in brining efficiency in school administration and management.

Who is a teacher?

A teacher is the one who facilitates learning by learners. An enlightened teacher is a system specialist who plans guides and implements a systematic educational process in his/her department.

What are the functions of an enlightened teacher in a Medical College?

1. Contributes to the planning & implementation of the curriculum.
2. Plans the topics & classes.
3. Plans teaching through different teaching-learning activities like

theory classes, seminar tutorials, case presentations etc.

4. While carrying out different teaching-learning activities, establishes rapport with learners.
5. Is a mentor- committed to his/her students over all development
6. Doesn't provide ready answers, but sees to it that the learner works on the problems solutions & diagnoses his/her needs.
7. Keeps himself/herself abreast of newer development in his/her specialty
8. Refreshes his/her knowledge & capabilities - thereby achieves personal, professional development.
9. Contributes to new knowledge in his/her specialty.

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2 PRINCIPLE OF ADULT LEARNING: THEORIES & LEARNING PROCESS

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How many times have we as teachers been confronted with situations in which we were not sure what to do? I know, usually we managed by doing with our students what had been done with us.

Thankfully, a body of theory exists, based on which a set of guiding principles have been formulated which are evidence /practice based. It is clear that theory has the potential both to inform practice and to be informed by it.

Before dealing with the topic proper, let us have clarity about the terms used in the title of the topic.

1. **Theory** (noun) : a comprehensive, coherent and internally consistent system of ideas about a set of phenomena. (Knowles).
2. **Principle** (noun) : a fundamental truth or proposition that serve as the foundation for a system of belief or behavior or for a chain of reasoning, a fundamental source or basis of something.

3 A. **Learning** (noun): the acquisition of knowledge or skills, through experience, practice, or study or by being taught.

B. **Learning**: Developing a way of thinking and acting that is characteristic of an expert community.

Such a way of thinking consists of three important elements:

a. The knowledge that represent phenomena in the subject domain.

b. The thinking activities that construe ,modify and use this knowledge to interpret situation in that domain.

c. And to act in them.

C. **Learning**: is the process by which you use your personal knowledge & experience to enable you to:
Make sense of things ,by thinking
Make things happen ,by doing
Bring about change,by moving from one position to another.

Learning, therefore, is essentially : "I think – I do – I move".4. **Learning process** : a relatively permanent change in behavior based on an individual's interactional experience with its environment.

5**. Adult** (noun / adjective) : a person who is fully grown or developed or of age.

LEARNING OBJECTIVES:By the end of the interaction the participants will have:

1. Overall understanding of essential educational theories relevant to the teaching of adult medical students.
2. Become aware of practice strategies to apply these theories .
3. Able to use these strategies to make students 'life long learners'.

Various educational theories are as follows:
- **Knowles concept of andragogy**
- **Self directed learning**
- **Self efficacy**
- **Reflective practice**
- **Experiential learning**
- **Role modeling**

ANDRAGOGY[1,2]

Much of our approach to teaching and learning is based on children at school and therefore termed pedagogy ['**Paid'-Greek word meaning ' a child,'Agogus'-Greek word meaning leading**].Malcolm Knowles studied adults enrolled in evening classes in New York and realized that their approach to learning was different. He coined the term andragogy ['**Aner'-Greek word meaning 'man not boy'**]to cover this approach in his book titled " Modern Practice of Adult Education."[3]

Androgogy is defined as '**the art and science of helping adults learn'**.The core basis of andragogy is that the attainment of adulthood is marked by adults coming to view themselves as self directed individuals. It is widely accepted that andragogy is not really a theory of *how* adults learn but a set of assumptions which are merely descriptions of adult learner. These are as follows:

Self-Concept: Adults are **independent and self directing**.They need to be responsible for their decisions on education, involvement in the planning & evaluation of their instructions.

Foundation: They have accumulated a great deal of **experience**[including errors], which is a rich resource for learning & provides basis for learning activities.

Readiness :They value learning that **integrates** with demands of their everyday life, having **immediate relevance** to their work and/or personal lives.**Orientation**: They are more interested in immediate, **problem centred approaches** than in subject centred ones.

Motivation :They are more motivated to learn by **internal** drives than by external ones.

Need to Know : adults need to know reasons for learning something.

Knowles formulated following **principles** based on his assumptions to guide adult learning activities. They are as follows:

1. An **effective learning climate** should be established.Learners should be comfortable,both physically & emotionally.They should feel safe & free to express themselves without judgement or ridicule.
2. Learners should be **involved in mutual planning** of methods & curricular directions. Involvement will help assure that collaboration occurs in the content & learning process.It will also increase the relevance to the learners' needs.
3. Learners should be involved in **diagnosing their own learning needs**.Once again,this will help to ensure meaningfulness & will trigger learners' internal motivation.It will also promote self

assessment & reflection,and effective integration of learning.

4. Learners should be encouraged to formulate their **own learning objectives**.The rationale for this is the same as for 3,above.Learners are thus encouraged to take control of their learning.
5. Learners should be encouraged **to identify resources & to devise strategies** for using them to accomplish their objectives.
6. Learners should be helped to **carry out their learning plan**.
7. Learners should be involved in **evaluating their own learning** .This is an essential step in a self-directed learning process that requires critical reflection on experience.[1,2,3]

SELF-DIRECTED LEARNING[1,4]

Self- directed learning (**SDL**) has been identified as an important skill for medical graduates. In a world in which half life of many facts and skills may be ten years or less, today's healthcare environment has become challenging. To meet these challenges, SDL is most essential. In SDL, learners take **initiative** in making use of resources rather than simply react to transmissions from resources, thus helping learner to learn **more** and learn **bette**r. Thus, the main propose of education must now be able to develop skills of inquiry, and more importantly to go acquiring new knowledge easily and skillfully the rest of his or her life.The concept of self directedness in learning was first discussed in educational literature as early as 1926. From these writings, a preliminary description of self directed learning emerged. **SDL, in its broadest meaning describes a process in which individuals take imitative with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying learning resources, choosing and implementing learning strategies and evaluating learning outcomes**. SDL has been identified as an important ability for medical graduates .

Why SDL ?

For following reasons SDL is important & an essential skill:

1. People who take the initiative in learning, learn more things and learn better.
2. It is more in tune with our natural process of psychological development as an essential aspect of maturing is developing the ability to take increasing responsibility of our lives to become increasing self-directed.

3. Fast changing health care environment.
4. Exponential growth in knowledge and skills.
5. Obsolescence of knowledge

This has led to emphasis on "**lifelong learning skills**".These include the ability to analyze the problems, define what needs to be learnt, know how to and where to access information, evaluate information, and be aware of the one's own limitations. The rationale is that students who develop such skills will be equipped for whatever the future holds and will keep up to date when they are no longer on formal training programmes.

SDL Strategies for the learner

The skills which help the learner to succeed as a self directed learner are:

1. Ability to question, inquire and solve problems
2. Keeping an open mind to others ' point of view
3. Scanning the data and choosing relevant resources quickly
4. Collecting data on own performance through self-observation and feedback from others
5. Assessing the present performance using that data, setting goals to improve own performance
6. Observing and modeling others' performance improve own performance
7. Making a firm commitment to work on own goals
8. Moving through the learning cycle, continually motivating own self
9. Taking note of the skills that make learner feel comfortable with and also which ones the learner would like to strengthen
10. Thinking of how the learner can work on them and improve them. Then making a conscious effort to do it.

SDL strategies for facilitator

1. Climate setting
2. Planning
3. Diagnosing needs for learning
4. Setting goals
5. Designing a learning plan
6. Engaging in learning activities
7. Evaluating learning outcomes

SELF EFFICACY[1,5]

Self efficacy refers to the belief in one's ability to organize and execute the courses of action required to produce a given attainment. Such beliefs influence the courses of action people choose to pursue, how much efforts they put into a given endeavor and how long they will persevere in the face of obstacles & failure. Self efficacy is not a fixed ability that one has or lacks in one's behavioral repertoire : Rather, it is a thinking process, a generative capability in which cognitive, social , emotional and behavioral sub skills are organized and effectively orchestrated to serve innumerable purposes. Self efficacy is concerned not with the number of skills one has, but with what one believes one can do with the skills under a variety of circumstances. Efficacy beliefs operate as a key factor in a generative system of human competence. Self efficacy is an important contributor to performance accomplishments, whatever the underlying skills might be. Personal efficacy beliefs influence the level of interest in occupational pursuits even when the influence of ability is removed.

A sense of personal efficacy is constructed through a complex process of self-persuasion,which is linked to four main information sources : In decreasing order of their strength they are : performance attainment, observations of other people, verbal persuasion, and physiological state. Successes raise our self-efficacy, while failures lower it. Failure are particularly likely to lower self efficacy if they occur early in the learning process and are not due to lack of effort or difficult situations. Observing other people similar to us performing can strengthen our beliefs that we can perform similar tasks, especially when the tasks are unfamiliar. Verbal persuasion from a credible source also can help.Finally the anxiety or nervousness in difficult situation have to re-interpreteted as excitement or anticipation, rather than as an ominous sign of vulnerability.

Role for the facilitator

1. Modelling or demonstration
2. Setting a clear goal or image of the desired outcome
3. Providing basic knowledge & skills needed as the foundation for the task
4. Providing guided practice with corrective feedback
5. Giving students opportunity to reflect on their learning

CONSTRUCTIVISM[1,6]

There is now a large consensus amongst expert researchers on learning and on the brain ,that we do not learn by passively receiving and then remembering what we are taught.Instead ,learning involves actively constructing our own meanings. This literally involves the construction of connections between neurons. We invent our own concepts and ideas linked to what we already know. This "**meaning making** " theory of learning is called " **constructivism**"

The most important implication of this theory is, the **teacher** is not viewed as a transmitter of knowledge but **as a guide who facilitates learning**. Other implication are : learning is based on prior knowledge and teachers should engage students in their learning **in an active way**.

Strategies for constructivist teaching:

Learning should involve activities to process the new material, linking it to what the student already knows. Tasks should be authentic, set in a meaningful context, and related to real world.

As students learning will involve errors. Tasks should offer opportunities for self- assessment, correction, peer discussion, teacher feed -back etc.

Use :

- Teaching by asking or **guided discovery**.
- Explaining tasks that require students to express their **understanding** to each other and to develop their understanding before expressing it
- Ask '**diagnostic' question** and answer and use wrong answers to explore and correct misunderstandings.
- Use ' **Socratic questioning**'[7]
    i) Questions for clarification
    ii) Questions that probe assumptions
    iii) Questions that probe reasons and evidence
    iv) Questions about viewpoints and perspectives. Questions that probe implications and consequence
    v) Questions about questions.
- Use thought provoking tasks and **questions** that are **high on Bloom's Taxonomy** e.g.

Analysis :'why'questions
Synthesis : ' how could you .. 'questions
Evaluation : judgment questions

These higher order questions require students to construct their own conception, of the new material. **You can't reason with material until you have conceptualized it, so questions that require reasoning force conceptualization**.

Use **case studies** that relate the topic to real life or former experience and so former learning.

- Use **group work** requiring students to discuss the material, so that peer checking and teaching takes place.
- Learning involves " pattern making", so use **mindmaps** and summaries to point out the **relation** of the parts of a topic to the whole. Also point out the relation of today's topic to other topics.
- Teach **skills** in the context of the topic of your subject. Think yourself as a skills teacher who uses content to teach the skills.
- Stimulation increases the learning rate. So use **rich multi sensory resources**, lively activities and generate a sense of fun where you can.

REFLECTIVE PRACTICE[8,9]

Reflection has been defined as "**a generic term for those intellectual and affective activities** in **which individuals engage to explore their experience in order to lead to a new understanding and appreciation**." Reflection is integral to competence.

Reflective practice is associated with learning from experience and is viewed as an **important strategy for** health professionals who embrace **life long learning**. The act of reflection is seen as a way of promoting the development of autonomous, qualified and self-directed professional. Engaging in reflective practice is **associated with** the **improvement of quality of care**,stimulating personal and professional growth and closing the gap between theory and practice. When the learners reflect on a situation, the learners do not simply **see more**,they **see differently**. The theory of reflective practice is primarily attributed to **Donald Schon**. He identified two types of reflection:

'**Reflection-in-action'** where the competent practioner uses knowledge ,experience and judgment to guide decisions in real life clinical situations as they are happening.

'**Reflection-on-action'** which happens after the experience, enables learning about clinical practice and promotes development of such practice.Competent medical practioner continually reflect on their clinical practice critically analyzing and evaluating their own clinical decision making, and their interaction with the patients and team members.

How can reflection be taught?

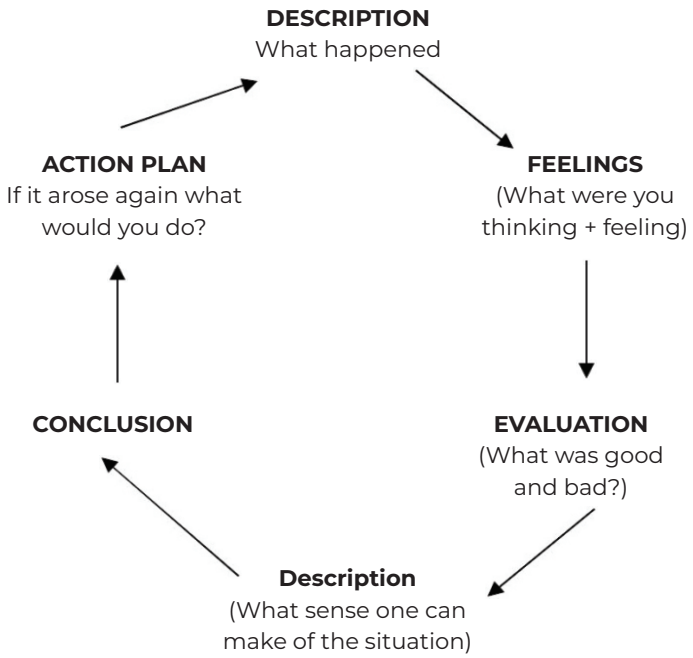
The following approaches might be useful:

- Encourage the use of a **reflective notebook** to jot down questions ,thoughts and observations as they occur to the learner while these triggers for learning are fresh and sharp.
- Encourage the use of a **framework** to help the learner adopt the discipline of reflection and so capture learning opportunities.

There are numerous frameworks for structuring the process of reflection. All reflective models comprise of three fundamental processes:

- **Retrospection** : thinking back on events.
- **Self-evaluation**: attending to feelings.
- **Reorientation** : re-evaluating experiences.

One of the important framework is **Gibb's reflective cycle** which is as follows



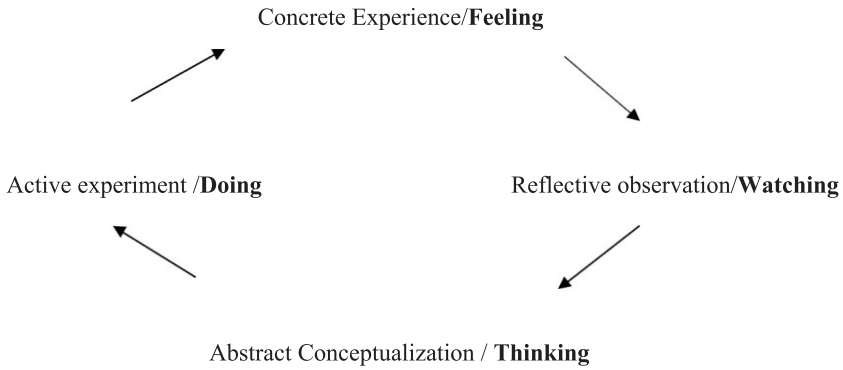
- Allocate a supervisor for the learner to reflect with: the learner needs to share observations and thoughts with someone who will "**provide a sounding board**", open up different perspectives, and provide support and guidance.
- **Feins** et al (1996) emphasize the importance in the context of doctors as educators and have designed a tool, the '**Teaching Matrix'** to encourage clinicians to reflect on their teaching before, during and after a session. The matrix enables the teacher to focus on five central questions;

1. Who am I teaching?
2. What am I teaching?
3. How will I teach it?
4. How will I know if the students have 'got it'?
5. How will I improve my teaching next time?

Potential benefits of Reflection	
Improved practice	* Promotion of deep learning
Development of self-regulation	* Increased awareness
Facilitation and integration of	*Improved thoughtfulness before and after practice
Theory and practice	* Development of personal theories of practice

EXPERIENTIAL LEARNING[1]

Kolb's experiential learning theory is derived from the work of Kurt Lewin, John Deway and Hean Piaget. It is model of learning based on research in social, educational and cognitive psychology and education. **This theory holds that learning is often most effective when based on experience** . The Kolb's model features it as a cyclical process. It links concrete experience with abstract conceptualization (grasping phenomena) through reflection and planning (transforming process). Reflection is standing back and thinking about the experience (what did it mean? How does it relate to previous experience? How did I feel?) Planning involves anticipating the application of new theories and skills (what I will do next time?) The experiential learning **cycle** which **can be entered at any stage**, provides a useful framework for planning a teaching session.



Feeling: this involves learning through the feelings developed when undergoing specific experiences.Thus learning takes place by being immersed in the problem,and relies more on intuitionthan logic.At this stage one does what 'feels right',based frequently on feelings developed when undertaking similar activities in the past.

Watching: this involves careful consideration of previous experiences,or watching, listening & careful reflection before taking action.Hence it is necessary to reflect upon experiences & feelings so as to formulate expectations for the future.

Thinking : learning at this stage involves analysis of the problem & the application of reflections so as to develop theories for the future.Often this will depend on logical thought, modeling & the development of hypotheses to be tested in the next stage.

Doing : learning at this stage involves the application of thoughts & ideas.It involves learning through trial & error,developing & amending theories to suit the situation .Clearly , this creates a new set of experiences from which feelings are gained & the cycle commences again.

The most effective learning occurs when you actively move around the experiential learning cycle.

The various experiential learning methods in medical education are apprenticeship, internship, mentoring, clinical supervision, on-job training, clinics and case study research.

Why case studies?

- Convey knowledge, facts, information to students
- Apply theory to situation
- Enhance students' decision making skills
- Improve students' technical or behavioral skill, in analyzing the data
- Stimulate students' interest in the subject
- Foster reflection
- Present a realistic picture of the complexities in the situation

ROLE MODELLING[10]

Educating future generations of physicians is one of the privileges and obligations of the medical profession. As an important part of this process, doctors historically have patterned their activities on those practitioners whom they have respect and trust. These have been called role models, "**individual admired for their way of being and acting as professionals**" Both consciously and unconsciously, learners model their activities on

such individual. Keeping this in mind the medical educators should strive to be the 'role models' to their students and junior doctors.

The characteristics of role model can be divided into three categories:

1) **Clinical competence:** This encompasses knowledge and skills, communication with patients and staff, and sound clinical reasoning and decision making.
2) **Teaching skills:** These are the tools required to transmit clinical competence. A student centered approach incorporating effective communication, feedback and opportunities for reflection is essential to effective role modelling.
3) **Personal qualities:** They include attributes that promote healing, such as compassion, honesty and integrity. Effective interpersonal relationships, enthusiasm for practice and teaching and an uncompromising quest for excellence are equally important.

The role modelling can happen in a formal way, in an informal way or in a hidden manner, as we now understand there is a formal, an informal and a hidden curriculum.

Strategies to improve role modelling

- Be aware of being a role modeling
- Demonstrate clinical / subject competence
- Protect time for teaching
- Show a positive attitudes for what you do
- Implement a student centered approach to teaching
- Facilitate reflection on clinical experience and what has been modelled
- Encourage dialogue with colleagues
- Engage in pertinent staff development
- Work to improve the institutional culture
- Whenever possible be explicit about what you are modelling.

Strategies to improve the Institutional Culture

- Raising awareness
- Pointing deficiencies
- Reinforcing strengths
- Analysing the local environment and proposing remedial action e.g.

faculty development

- Create an environment that supports positive role modelling

Seven principles to guide teaching practice[1]

1. The learner should be an **active** contributor to the educational process.
2. Learning should closely relate to **understanding & solving real life problems**.
3. Learners' **current** knowledge & experiences are critical in new learning situations & need to be taken into account.
4. E-Learners should be given opportunity and support to use **self direction** in their learning.
5. Learners should be given opportunities and support for practice, accompanied by **self assessment** and **constructive feedback** from teachers & peers.
6. Learners should be given opportunity to **reflect** on their practice; this involves analyzing and assessing their own performance & developing new perspectives and options.
7. Use of **role models** by medical educator has a major impact on learners.

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3 TAXONOMY OF EDUCATIONAL OBJECTIVES

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OBJECTIVES:

At the end of this session, the learner should be able to

- Define the terms cognitive, affective and psychomotor domains.
- Relate these terms to intellectual skills, communication skills and manipulative skills respectively.
- Formulate educational objectives belonging primarily to cognitive, affective and psychomotor domains.

TAXONOMY OF DOMAINS

There was a time, when the teacher played a dominant role in teaching-learning processes. He garnered paramount importance and it was only he who decided 'what is to be taught?','how it is to be taught?' and 'how it is to be assessed?'. This 'Guru' played a pivotal role, although he always aimed at benefiting his students.

Gradually, but steadily it is being realised that it is the 'learner', who is more important. Therefore the teaching-learning methods and techniques are being altered, modified or adapted accordingly, so that the end result is appropriate 'learning'.

Learning – Learning is a process and not a product. It is a process which brings about a relatively permanent acquisition of KNOWLEDGE, SKILLS and ATTITUDES or a relatively permanent change in the BEHAVIOR of the learner. (which was not there before)

Behavior-It is how one thinks, feels & does.

Thinking	Feeling	Doing
↓	↓	↓
Intellectual	Communicative/	Practical/Manipulative attitude

So, to bring about this expected change in the behavior (i.e. learning) we need to classify the learning objectives into different groups called as “Domains”. This classification of domains is referred to as Taxonomy of domains.

Thanking	Feeling	Doing
↓	↓	↓
Intellectual	Communicative/ attitude	Practical/Manipulative
↓	↓	↓
COGNITIVE **DOMAIN**	***AFFECTIVE*** **DOMAIN**	***PSYCHOMOTOR*** **DOMAIN**

What is' Taxonomy'?-
It is the classification of plants and animals into different classes, groups families & species keeping in mind their natural relationships, their similarities and differences. and considering their evolution into more differentiated, developed or evolved forms.

What is a 'Domain'?
It literally means “ an area under ones control”.

These 'domains' or 'areas under control' are not strictly cordoned off areas. All the three domains are very much a part of all the educational objectives. They are to be skillfully linked together and segregated skillfully as and when required, for effective teaching-learning activities.

'COGNITIVE DOMAIN'-
Domain of intellectual skills.
This domain is concerned with acquiring knowledge, recalling learnt knowledge, recognizing knowledge and using it (know how & when to use it) It deals with development of intellectual skills and abilities.

This domain has 6 levels—

1. Knowledge :
2. Comprehension
3. Application
4. Analysis
5. Synthesis
6. Evaluation

1. Knowledge-

It is the ability to recollect, recall, the appropriate matter that has been learnt.

For ex- a) Define essential hypertension?
b)Name intravenous inducing agents?

Define, Recall, List out, Name, Recite

2. Comprehension -Understanding

To comprehend a data or information to gain its fullest meaning. It is the ability to understand a communication.

Ex-

a) Given a set of blood pressure recordings the learner should be able to categorize into mild, moderate and severe hypertension.
b) Understand pharmacodynamics & pharmacokinetics of intravenous inducing agents.
Explain, Narrate, Compare, Interpret, Rephrase, Translate

3) Application-

It is the ability to use facts, principles, theories, generalizations, & such data.

This requires knowledge & comprehension.

Ex- a) Prescribe correct antihypertensives to a patient with hypertension.
b) Select appropriate intravenous inducing agent for a patient with PIH.

Prescribe, Select, Infer, Diagnose, Reject.

4. **Analysis**- It is the ability to break down a problem or a data into component parts to recognize and interpret the findings. This requires knowledge, comprehension and application.Ex-a) Providing antihypertensive therapy, considering his personal, socio- economic & cultural factors.(which includes- life style , diet, exercise and drugs management)

c) Administer an appropriate intravenous anaesthetic inducing agent in a patient with PIH considering her poor socio-economic background.

5. ***Synthesis*** - It is the ability to assemble parts into a coherent whole. It requires knowledge, comprehension, application and analysis.
   Ex To provide individualized, rational prescription for a patient with hypertension /PIH

6. ***Evaluation***- It is the ability of a learner to judge the utility, reliability and merit of the principles, procedures on the basis of established format/criteria.

It requires knowledge, comprehension, application, analysis and synthesis.

Ex- The learner would be able to outline the progress/outcome of a patient with hypertension/PIH .

It is to be noted that each preceding level is a pre-requisite to attaining the next level.

AFFECTIVE DOMAIN-

Concerned with emotions or affections. Deals with interpersonal relationships.

Concerned with values, Interests, attitudes, adjustments, understanding situations.

Levels-3

1. Receiving
2. Responding
3. Internalistion

1. **Receiving-** It is the ability to come to know, to become aware of a

situation. Being willing to receive an idea/thought and give it some attention.Ex- Ability to show that he/she is aware of the anxiety of a patient who is waiting for an invasive procedure. To sympathise.

2. ***Responding***- Having received the situation, it is the ability to talk to, to comfort, to reassure, to help.
   Ex- To reassure patient waiting for the invasive procedure. To empathise.
3. ***Internalistion***- It is the ability to receive and respond easily, sympathise and empathise so naturally that it forms an effortless process for every patient coming for the invasive procedure.

PSYCHOMOTOR DOMAIN –

Domain of practical skills.

It deals with acquisition of physical abilities, motor or muscular skills, manipulation or handling of instruments or objects- all requiring neuromuscular co-ordination. This domain involves perception and mind (cognition and affection)

Levels

1) Imitation
2) Practice under supervision/guidance.
3) Perform independently and skillfully.

1) Imitation

Includes, perception (i.e understanding the sensory input) and initiation of action. Ability to do as the instructor does. Ex- Perform basic CPBR on a manikin.

2) Practice under guidance/Supervision.

Ex- Perform CPBR in a hospital,under supervision and guidance.

3) Perform independently and skillfully.

Ex-With high degree of proficiency perform CPBR during an emergency.

Ability to perform under difficult situations, and ability to create something new are all high order performing skills, which require repeated exposures of the learner to such situations.

Purposes served by Taxonomy of Domains-

We often debate in our departments on what changes or modifications in the teaching-learning methods/techniques would make our students 'follow', 'understand' 'realise' or grasp easily. These terms appear similar, but aren't they different?

1. Taxonomy of domain helps us to avoid this kind of confusion and will help us to discuss the instructional matter more precisely, avoiding such nebulous terms.
2. It permits analysis of the learning process (i.e.teaching-learning and evaluation activities) and thereby helps the teacher in educational decision making.
3. Further the awareness of different domains and hierarchal levels within each domain helps the teacher in formulating educational objective and plan instruction and assessment more scientifically.
4. Effective communication is made possible

4 EDUCATIONAL & LEARNING OBJECTIVES

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OBJECTIVES:

At the end of the chapter, the reader should be able to:

- Define Educational & Learning Objectives
- Differentiate the different types of Educational Objectives
- Enumerate qualities of Educational Objectives
- Discuss needs of Educational Objectives in educational process
- Identify elements of Specific Learning Objectives
- Define important qualities of Specific Learning Objectives

INTRODUCTION:

Education is a process to bring about desirable changes in the behavior of learners in the form of knowledge, proficiency in skill & development in attitudes. The three main components of educational processes are development of educational objectives, organization of teaching – learning activities & evaluations which are best depicted as spiral to show that there is a constant scope for improvement.

Educational objectives are the primary building blocks of good curriculum design. Educational objectives are statements which describe what the student should be able to do at the end of learning period that he couldn't do before. Educational objectives guide the teacher for the planning & delivery of instruction and evaluation of student's learning in terms of acquisition of knowledge, skill & attitudes. Educational objectives are also called as learning objectives as they are student centered.

TYPES OF EDUCATIONAL OBJECTIVES:

- Institutional Objectives – Broad, comprehensive & clear. It refers to capabilities of the individuals trained by that institute. Institutions may have different objectives for different courses run by it. Institutional goals are few & mostly between ten & twenty.
- Intermediate/ Departmental Objectives – Derived from Institutional Objectives & some objectives may be common for different departments
- Specific Learning Objectives – Drawn from Departmental Objectives

SOURCES OF EDUCATIONAL OBJECTIVES:

For generation of educational objectives, several inputs are required.

- Health need of society is the first & foremost consideration & this information can be obtained from the community
- Policy guidelines of the Government/ National Health Program
- Newly emerging diseases
- Special needs of the profession such as medico-legal skills, communication skills, management skills etc.

QUALITIES OF EDUCATIONAL OBJECTIVES:

- Relevance to the needs of learner
- Clarity & unequivocality
- Feasibility
- Observable & measurable

NEED OF EDUCATIONAL OBJECTIVES:

- Development of teaching-learning process –
- For the teacher, basis for the preparation of instructional materials, content or method;
- For the students, to organize their efforts to achieve these objectives.
- Development of evaluation process

SPECIFIC LEARNING OBJECTIVES (SLO):

A statement in specific and measurable terms that describes desired learner competence in terms of acquisition of knowledge, skills & attitudes as a result learning activity. Specific Learning Objectives are aimed at three domains of learning – cognitive, psychomotor & affective. SLO are statements that describe what a learner should be able to do as a result of

teaching. Many factors can interfere with the achievements of objectives: the existing knowledge of the learner, the relevance of the material presented & the skill of the teacher.

QUALITIESS OF LEARNING OBJECTIVES:

- Consistent with the goals of the curriculum
- Specific
- Measurable
- Attainable
- Results-Focused
- Time-Focused

ELEMENTS OF SLO

- Activity: It is expressed in active verb. It describes what skill or behavioral change is expected in the learner. Content: It describes the subject or topic in relation to which the activity is performed.
- Criterion: It describes the expected desirable level of proficiency of the learner. It guides how to assess the outcome and what level of competency is expected to the learner
- Condition: It describes the restrictions applied or recourses provided during assessment.

To make the Educational Objectives more specific & measurable, the above mentioned four elements should be included in form of –

- Who (Student) **Will Do** (Activity)
- **How much/ How well** (Criterion)
- **Of what** (Content)
- **By when** (Condition)

LEARNING OBJECTIVES DOMAIN:

- Cognitive (knowing)
- Psychomotor (doing)
- Affective (feeling)

LEVELS OF LEARNING OBJECTIVES:

Sequence the content of each objective in a logical order, for example, from simple to complex, from known to unknown, chronologically

(Bloom's Taxonomy)

- Knowledge-Comprehension
- Application-Analysis
- Synthesis-Evaluation

WRITING LEARNING OBJECTIVES:

- **Start with an action verb**
- **Describe the content**
- **Specify the condition**
- **Set a performance standards**

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5 GOOD TEACHING PRACTICES

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Introduction:

Noel Entwistle, a noted research scholar in field of education writes: “All too often in education ,pundits and some researchers for that matter ,seem to believe that they have found the method which all teachers should use”. Anybody with common sense can tell that this is impossible. As we know teaching is used to accomplish a variety of different educational aims, in many subjects and is aimed at students from all sorts of background, with varying degree of cognitive ability and at different levels of intellectual maturity. The same holds true for teachers. Across the years ,the popularity of various instruction methods has waxed and waned.

Then, what is the way out? Entwistle's answer is intriguing.He writes :“In the end, 'best practice' is whatever helps students to engage more deeply with the subject and to become more actively responsible for their own learning”.

This may appear confusing ,abstract or too open ended.What is the way out? During our interaction regarding : Principles of Adult Learning :Theories and Learning process, we came across various theories of learning e,g : Andragogy, Self Directed Learning, Constructivsm, Reflective Practice , Experiential learning and Role modelling.

The learning principles emerging from them are discussed below. Reflection on one's best experiences with learning will show that in those experiences the teacher had incorporated one or more of the following learning principles.

Principle 1: Prior knowledge is the foundation on which future knowledge is built.

The learner brings some prior learning/experience in the class. These are vital to the current learning and must be incorporated in the learning process. As a facilitator one must first assess prior knowledge; followed by discussion of the responses for clarification ; then build upon the knowledge which the learner already has, adding new learning on to it; and then check for understanding to ensure new learning has occurred. The links themselves are more important than the new information. The more links, and the stronger they are, the easier it becomes to apply new knowledge across a broad range of situations and problems.

KWL strategy i.e. Know, Want, Learn technique can help for assessing prior knowledge. In this , before the session the students writes on a handout what they already know about the topic and what they want to learn about it. After the class the students, again write on the hand-out what they did learn. If it is a practical class the learner can be asked to demonstrate the skill to be learnt.

Principle 2: 'Warming' the climate for learning:
In academic circles, climate refers to the atmosphere of warmth existing between the teacher and the students.Much research suggests that few other factors produce a more lasting impact on learning than the professor's approval or disapproval of the students work,and their inclass interaction. The key feature here is to create an environment of respect for the learner.

Simple way of doing it is to be courteous and patient with students. Listening to their viewpoints and questions. Being enthusiastic for and use of students' own ideas. Encourage students to ask questions as well as to answer questions. Do not pull them up in front of their peers. If correction is required call them in private and give constructive feedback to them. Design and introduce group activities in the class e.g. Think-Pair-share.In this, put a question to the class. Ask each student to first think about it. Encourage them to write down their thoughts. Then ask them to discuss it with the person sitting next to them. If it is a lecture class with a large group of students ask for few pairs to respond. If it is a tutorial with a

small group of students ask each pair to respond. The whole activity takes hardly few minutes. It gives confidence to the learner as they are sharing their thoughts, with peer and the responses to the whole class is not their individual response but that of the shared one with their peer.

As far as possible the teacher should call students by their names. Teacher is a leader in the class and should display the seven qualities of leadership: 1) Enthusiasm 2)Integrity 3)Toughness 4) Fairness 5) Warmth 6) Humility and 7)Confidence.

Principle 3: Active learning:
"Active Learning" is an approach to teaching that incorporates one or more of the five elements of talking and listening, reading, writing, reflecting and creating into the engagements by the learners in relevant and authentic tasks in a supportive environment. It produces better learning including concept formation; increased motivation; discoveries of misconceptions; and acquisition of knowledge, critical thinking, attitudes and values and interpersonal skills. Case discussions are one example of active learning approach. Other strategies which can be used to encourage active participation are: crossword puzzles, flash cards, jigsaw, question pairs, one minute papers, structured controversy, intentional reading, summary of the class etc.

Principle 4: Relevant content and problem based approach:
Relevant content applicable to their practice makes learners value the learning and problem centered approach enhances the learning process as it has got practical applications. To achieve this the teachers can develop specific learning objectives which address relevant content. Case based learning is the best way of making the learning relevant & real time.: for example a patient with jaundice can be used to discuss the pathophysiological basis of signs and symptoms of liver failure, followed by the practical utility of liver function tests in different types of jaundice and managing of the patient etc.

Early clinical exposure: Here the first year medical students are exposed to the patients. However the discussion is on the basic science concepts and not on the diagnosis and management. The purpose of clinical case is to provide relevance and context to; and importance of learning basic

science concepts. For example during physiology class on thyroid gland, the students can be taken to the hospital to see a patient with goiter followed by discussion of physiology of thyroid glands. Alternatively the patient can be brought to the classroom instead of a hospital visit after taking informed consent from the patient. Similarly during pathology class on thyroid gland, to introduce the procedure of the 'Fine Needle Aspiration Cytology', the procedure can be demonstrated with all the relevant details on a patient with enlargement of thyroid gland.

Community based learning: Globally the push is towards community based learning. This can be done by getting students to do small projects in the community. For example they can screen for hypothyroidism in a small area, present their findings followed by a debriefing by the teacher on physiology of the thyroid gland.

Thus learning cannot be context free, knowledge and its organization into an individual's personal construct system, is highly dependent on the context in which it was learned.

Principle 5: Self Directed Learning:
Self- directed learning (SDL) has been identified as an important skill for medical graduates . In such a world which has half life of many facts and skills may be ten years or less, today's health care environment has become challenging. To meet these challenges, SDL is most essential. In SDL ,learners take initiative in making use of resources rather than simply react to transmissions from resources, thus helping learner to learn more and learn better. Thus, the main purpose of education must now be able to develop skills of inquiry ,and more importantly to go acquiring new knowledge easily and skillfully for the rest of her or his life.

The concept of self directedness in learning was first discussed in educational literature as early as 1926. From these writings , a preliminary description of self directed learning emerged. SDL ,in its broadest meaning describes a process in which individuals take initiative with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying learning resources, choosing and implementing learning strategies and evaluating learning outcomes. SDL has been identified as an important ability for medical graduates.

SDL can be initiated by giving assignments which require higher order thinking. However, in order to inculcate skills in the students it is mandatory to provide them with appropriate learning resources such as references, journal articles, books, handouts, self-learning modules etc. This can help in developing new neuronal circuits and connections in the brain.

Principle 6: Feed back and Reflections:

Feedback is a vital part of education. It helps learners to maximize their potential at different stages of training, raise their awareness of strengths and areas for improvement, and identify actions to be taken to improve performance. It is important to give constructive, timely feedback to the students on their learning and encourage them to reflect to enhance learning. This leads to successful learning and mastery of content, skills and judgment. Without feedback, mistakes can go uncorrected and bad habits can develop. The learners may also develop uncorrectable behavior or make inaccurate assumptions.

The ideal behavior for delivering feedback are: eye contact, enthusiasm, asking & encouraging questions, supervision, competence, professionalism, interest in the learner, being honest, giving well defined goals, giving clear explainations, emphasis on problem solving, student centred, timely fashion, focused on behaviour, limited in volume, in safe environment, allows learner self assessment,offers recommendation for improvement and sumarises for closure.It is to be kept in mind that,feed back is formative not evaluative, it presents information, not judgement. Also, if feedback is to be effective it needs to be frequent, constructive and interactive.

Reflective practice is associated with learning from experience and is viewed as an important strategy for health professionals who are expected to embrace life long learning.The act of reflection is seen as a way of promoting the development of autonomous,qualified and self-directed professional.Engaging in reflective practice is associated with the improvement of quality of care, stimulating personal and professional growth and closing the gap between theory and practice. When the learners reflect on a situation ,the learners do not simply see more , they

see differently. How can reflection be taught has already been mentioned in the article :Principle of Adult Learning :Theories and Learning process.

Principle 7 : Address different learning styles:

All learners do not learn the same way. Students have different learning styles. The potential exists to use information about students' learning style so that they perform better. The teachers have to keep in mind these possibilities as this will help students to :a) Identify their academic learning strengths and weaknesses, b) Help them study more effectively, c) Approach problem solving more flexibly, especially when working with others. The Myers-Briggs Type Inventory (MBTI) has become a benchmark for identifying personality and learning style attributes. In this method there are four preference scales with two choices in each, the student has to select what best describes him/her. The preference scale 1 includes: Extroversion and Introversion. Preference scale 2 includes Sensing and Intuition. Preference scale 3 includes Thinking and Feeling and Preference scale 4 includes Judging and Perceiving. Depending on the combinations of the choices in the preference scales, there are 16 personality types. Based on these personality types students can be briefed about what are their strengths and weakness and what to do about them. Other approaches to categorizing learning styles are

1) Kolb cycle learning style (Honey and Mumford,1982) : Types of learner based on a cyclic model of learning process are grouped as : Activator, Reflector, Theorist and Pragmatist.
2) Multiple intelligences (by Gardner,1983,1993) :based on subdivision of intelligence into various categories that are said to be more or less profound in different people and which influence the way in which we process information the learners are classified as :Verbal-Linguistic, Logical- Mathematical, Visual-Spatial, Musical, Bodily Kinesthetic, Interpersonal, Intrapersonal, Naturalist, Existentialist.
3) VARK learning preferences(Fleming ,2001): A subset of learning preferences devised from Gardner's Multiple intelligences and MBTI the learners are divided as giving preference for Visual, Aural, Reading –writing and Kinesthetic patterns.

Thus, as a teacher one must use a variety of methods to address the different learning styles of the students to maximize learning. These

methods may include role play ,case studies, questioning, using various technologies, such as media, video,online games etc.

Principle 8 :Role modelling:

Educating future generation of doctors is one of the privileges and obligations of the medical profession. As an important part of the process, doctors have historically patterned their studies on those practitioners whom they respect and trust. They have been called role modells, “individuals admired for their way of being and acting as professionals.” Both consciously and unconsciously, learners model their activities on such individuals. Keeping this in mind the medical educators should strive to be the 'role models' to their students and junior doctors.

Principle 9 :Emotional intelligence:

Emotional Intelligence : It is a form of intelligence that involves ability to have an appropriate relationship with our own emotions and those of other people, to discriminate between them and then to use the information to guide over thoughts and deeds. The following table can illustrate different ways by which emotional intelligence can be used in a productive manner.

Emotional intelligence – converting lack of knowledge into learning need:

Principle of emotional intelligence	**Learner's emotion and its result**	**Suggested teacher response**
Perception of emotion	Fear of ignorance at asking a question leading to lack of participation	Recognise lack of participation as fear
Using emotion to change mood and achieve the desired action	Changing fear to acceptance of knowledge gaps and a need to learn	Acknowledging the importance of and allowing questioning e.g. 'That question is important because .....

Understanding the language of emotion	Discouragement at not doing well at a task, leading to lack of motivation	Recognise lack of motivation as discouragemen Manage one's own and others emotion to achieve goals A discouraged trainee wants to give up training after not performing a task well Highlight positive aspects of a task then those which need improvement and set realistic goals for developme

To conclude many of the teachers may already be following some or all of the principles.The way forward is to be open for change ,being positive and be the best possible facilitator.

6 MICROTEACHING

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INTRODUCTION:

Medical teachers most often do not receive a special training in pedagogic techniques, as it is usually not considered necessary for their recruitment or for an efficient continued performance. Their ability to teach therefore largely depends on self training, either by trial and error while teaching or by observation of colleagues, who may or may not be helpful examples.

Getting in front of students is a trying experience for a budding teacher. One may earnestly try to prepare him or herself: read books about teaching methods, attend lectures and take courses on didactics.

DEFINITION:

Defined as a system of "organized practice teaching that makes it possible to concentrate on specified teaching behavior and to practice teaching under controlled conditions."

Microteaching in other words is an excellent way to build up skills and confidence, to experience a range of lecturing/tutoring styles and to learn and practice giving constructive feedback. Microteaching gives instructors an opportunity to safely put themselves "under the microscope" of a small group audience, but also to observe and comment on other people's performances

MICROTEACHING CYCLE:

A short lesson of 5-10 minutes
Presented before a group of peers, supervisor and subject expert
Concentrating on one or two teaching skills
Get feedback after presentation
Using feedback re-plan & re-teach

TEACHING SKILLS:

A teaching skill is the art of the teacher (both verbal and non verbal commands) which makes communication between the teacher and pupil more effective.

COMPONENT SKILLS OF TEACHING:

Lesson planning
Set induction
Presentation
Stimulus variation Use of a-v aids
Reinforcement
Questioning
Non-verbal cues
Closure
Take home message.

ADVANTAGES:

It focuses on sharpening & developing specific teaching skills and eliminating errors.

It enables understanding of behaviors important in classroom teaching

It increases the confidence of the learner teacher

It is a vehicle of continuous training applicable at all stages not only to teachers at the beginning of their career but also for more senior teachers.

It enables projection of model instructional skills.

It provides expert supervision and a constructive feedback.

It provides for repeated practice without adverse consequence to the teacher or his students.

LIMITATIONS:

Microteaching produces homogenised standard robots with set smiles and procedures.

It is said to be (wrongly) a form of play acting unnatural surroundings and it is feared that the acquired skills may not be internalised.

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7 TEACHING LEARNING METHODS SMALL GROUP TEACHING

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Introduction:

Small group teaching (SGT) is a face to face interaction carried out in a planned, organised and democratic manner among members of relatively small group having a common purpose of achieving specific learning objectives. Size of the group varies from 5 to 10 participants or may extend up to 20 or 30 participants.

Advantages

- Develops higher order thinking skills – application of concepts and problem solving.
- Develops communication skills.

Types of small group teaching: Group Discussion:

It is a face to face interaction between participants of a small group, usually consisting of 5 to 20 participants.

Advantages:

- It is democratic & demands activity on the part of the learner.
- Learner discovers his strengths & weaknesses compared to those of his fellow learners. Disadvantages:
- Necessity of optimum Teacher-Student ratio.
- Poorly prepared & inexperienced group. Improving the effectiveness of Group Discussion:
- Role of instructor/facilitator –

- Must be well prepared to clarify doubts & guide the flow of discussion.
- Should know each member of the group.
- Should be experienced.
- Should plan for suitable environment.
- Regulating the group-

Students –

- Initiator/contributoro Information/opinion giver
- Evaluator
- Record keeper
- Reporter

Types of group discussion:

- Controlled discussion
- Free group discussion
- Buzz group discussion
- Brain storming discussion
- Syndicate discussion.

Seminar:

It consists of group of persons engaged in advanced study of a subject, who meet under the direction of an expert staff.

Advantage – Availability of an authority on the subject, enables in-depth discussion & authoritative guidance.

Disadvantage – Difficult in getting suitable resource person.

Tutorials:

A small group of learners are guided by a teacher to help enhance their knowledge, improve understanding of the subject & clear doubts.

Advantages –

- Active learning
- Opportunity to amend mistakes & to find out extent of learning. Disadvantage – Poor preparation of the learner group.

Demonstration:
It is a method where teacher performs some operation to demonstrate the skill or a phenomenon, while the students watch & learn.

Practical/ Bedside Teaching / Field Work: Advantages –
- Active learning process.
- Permits evaluation of all three domains.
- Develops qualities of scientific thoughts. Disadvantages – High personal costs.

Roll Play: Acting out a situation, it helps to learn the communication skills.

Workshop:
It is a meeting in which experienced persons in responsible positions come together with experts to find solution to problem that have cropped up in the course of their work.

Advantages –
- Active involvement by each participant who work & learn from practical (hands on) experience.
- Many different teaching learning methods can be incorporated.

Process of SGT
- Planning stage
- Functioning
- Evaluation
- Feedback
- Re-planning

Large Group Teaching

Introduction
Teaching is a process which facilitates learning by encouraging learners to think, feel & do. Learning is a process which results in relatively permanent change in the behaviour of the learner in the way of thinking, feeling & doing and is reflected in the acquisition of knowledge and skills and development in attitude by the learner. Learning is an active and continuous process.

Classification of teaching learning methods:

1. Control based classification.
    a. Teacher controlled teaching learning activity –lectures, symposium, team teaching, demonstration, bedside clinics etc.
    b. Learner controlled teaching learning activities – free group discussion, project work, and self study.

2. Group size based classification:
    a. Large group method – lecture, symposium, panel discussion.
    b. Small group method (5-30 learners) – group discussion, seminar, workshop, bedside clinics, demonstration, field visit.
    c. Individual teaching learning methods – project work,assignment.

Large Group Teaching Learning Methods:

Lecture:

Lecture is a presentation of facts with organised thoughts & ideas by a qualified person. It is the oldest, most common and dominantly used teaching method. One teacher/facilitator speaks to a large group of learners with the help of A-V aids

Advantage:

1. It is an economical, simple and quick way of imparting knowledge to the students.
2. It is useful teaching learning method for large group.
3. It is live personal means of motivating, sensitising and stimulating the students and is a good means for introducing new subject or topic

Disadvantags:

1. Passive nature of the audience and limited feedback may lead to low receptivity and relative infectivity
2. Facilitator should have high skill to engage attention of learner for 40 - 60 minutes
3. Heterogeneous group – Under achievers and high achievers

Lecture planning: (What and How) Content

1. Purpose - Set the objectives. Objectives from must to know area is must
2. Sequences of the content– identify the points that need to be stressed.

3. Select appropriate AV aids

Delivery of the lecture

1. Introduction:
    a. Begin by arousing the interest. b. Present aims & objectives.
2. Body :
    a. Tell the matter relevant to topic in sequential manner
    b. Avoid monotony.
    c. Assess learner response.
    d. Give two to three minutes break between main points. e. Present summary at the end.
3. Steps to improve active participation by the learner.
    a. Open the lecture with series of question
    b. Interactive session.

Evaluation of effectiveness of lecture:

a. Questioning
b. Informal feedback - Student behaviour
c. Formal feedback -by student evaluation.
d. Peer evaluation.
e. Pre test and Post test

Classroom management:

a. Monitoring the classroom activities to minimise disruptive behaviour.
b. Managing the misbehaviour quickly (criticize the act –not the person).

Best practice while delivering a lecture-

1. Present material clearly & logically.
2. Enable learners to understand basic principles
3. Should be clearly audible.
4. Presentation should move from known to unknown & from simple to complex.
5. Utilize teaching aids judiciously.

Pre-requisites for improving skills in learning – micro teaching, mini teaching & classroom interaction analysis.

***A good lecturer is a Text Book plus Personality* – Flexner**

Symposiu:

Symposium is a series of prepared short talks (10 to 15 minutes) given by experts (numbering 2 to 5) on many aspects of a topic under a chairperson. There is no discussion among the speakers. The audience is passive unless question time is allotted (symposium forum)

Advantag:

1. Concise & logical presentation of new ideas.
2. Fair analysis of different aspects of controversial issues.
3. Short speeches & change of speaker keeps the audience alert. Limitations: Audience is passive, unless question time is permitted.

Penal discussion:

Group of 4 or more sit with a moderator. They conduct an orderly logical conversation on assigned topic. Each member delivers an opening remark for 3 to 5 minutes, before exchanging ideas. Each member a particular view of the topic.

Advantag:

1. Audience can understand various aspects of the problem or issue.
2. Frequent change of speaker & their viewpoint retains the interest of the audience.

Limitations:

1. The panellist may not cover all aspects of the problem or issue.
2. Audience is passive, unless question time is permitted.

Team teachig:

Objective of team teaching is improving quality of the teaching by utilizing talent and skill of team of teachers. It involves use of special talents or skills of many teachers to provide variety of learning experience. Workshop is an example of this style of team teaching Specialisation based team teaching involves multidisciplinary team of teachers who provide modular teaching learning on national health programme

8 APPROPRIATE USE OF MEDIA IN LEARNING AND TEACHING

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"Newer technologies such as computers and video conferencing are not necessarily better (or worse) for teaching or learning than older technologies…they are just different . . . The choice of technology should be driven by the needs of the learners and the context in which we are working, not by its novelty." Bates AW

Introduction

Aids in Teaching and Learning Process has seen a sea of change over past decades. Since the invention of Blackboard in year 1814, till now many audio visual aids have come to help simplify teaching and learning process.

Though all the aids have advantages and disadvantages, the use of it depends largely on the situation where teaching and learning process takes place.

For eg. a group discussion need Blackboard or Overhead projector and a large class room requires power point presentation. Just because newer audio visual aids are available, the utility and importance of old audio visual aids should never be underestimated.

The audio visual aids help

1. Improve effectiveness of communication
2. Improve audience perception of presenter
3. Improve confidence of the speaker.

Power Point presentation is most recent and widely used audio visual aid. Though it is fascinating and make teaching and learning process more attractive, we need to be aware of its pitfall too.

Commonly Used Audio-Visual Aids are

1. Flipcharts
2. Slide shows
3. Illustrations
4. Audio tapes
5. Multimedia
6. 3D models
7. Blackboards
8. Overhead projectors
9. Computer graphics
10. Videos
11. Physical objects

Each aid mentioned above has its own Advantages and Disadvantages. Its up to the teaching and learning scenario that decide use of appropriate aid.

BLACK BOARD

"The inventor of blackboard deserves to be ranked the best contributors to learning and science, if not the best benefactors of mankind". Dumstead 1841

Introduction

It is a reusable writing surface on which texts / drawings are made with sticks of calcium sulfate (Chalks)

Black board is term used in united kingdom and Chalk board in United states.

Recently green coloured boards are made use because Green colour is considered easier on eyes.

It was James Pillians from Scotland who invented blackboard.

Following are the Do's and Don't's while using blackboard

1. Clean the surface before you start writing
2. Start writing from left corner to right corner
3. Write in straight rows

4. Write short sentences
5. Draw diagrams if, ten mins before class.
6. For diagrams use only two colours –White and yellow.
7. Don't talk while writing
8. Don't write at sides and Below
9. Don't pre write things on board, unless charts
10. Put one concept at a time
11. Rub clean, once everyone has finished copying.
12. Write Large letters
13. Avoid abbreviations unless standard ones.

Two important Rules to be followed while using blackboard

1. Visibility –All the participants should be able to visualize the content written on black board.
2. Legibility- The writing should be legible and easily readable by participants.

The Advantages of Blackboard are

1. Its a simple tool
2. Cost effective
3. Available everywhere
4. No electricity required
5. No dark room required
6. Small groups are best taught by using Blackboard
7. The teacher need to be prepared about the subject
8. The speed of teaching and learning can be controlled.

The Disadvantages of Blackboard are

1. Its not for larger audience
2. Cannot be used to show tables, graphs, Charts.
3. It has Limited speed
4. Its very Dusty
5. The material written on it has Limited visibility.
6. Advance preparation of materials is not possible.

Preparing overhead transparencies

Overhead Projectors is another widely used aid in teaching and learning process.

The materials required for use of the projector are OHP pens, Transparencies and Template.

Following are the Do's and Dont's while making Overhead transparencies

1. Use blue, black and or green colors to write.
2. Capital letters for titles only.
3. Regular and even lettering.
4. Not more than 6 words in line.
5. Preferable to use typed rather than handwritten script
6. Use a type size that is big enough to be read by the whole audience — for example, at least 20 points
7. Make sure that the color of your text works—for example, dark print on a pale background
8. Limit each transparency to one idea or concept
9. Use a clear, systematic layout.
10. Max 36 words per slide, Max 6 - 8 lines

Don't

1. Use small print
2. Use overhead transparencies packed with tables and figures
3. Use light Colors
4. Try to put too much information on a single transparency
5. Overload.

Using over head projector

- The sequence of actions when using an overhead projector-
  turning off the light,
  ↓
  recovering the slide,
  ↓
  placing the next slide on the table,
  ↓
  turning on the light.

- Common mistake is to leave the projector on throughout the presentation
- Make sure that the information you put on your transparencies will be legible by all of your audience.
- Put number to all sheets.
- Use overlays
- Darken room before projecting radiographs.
- Give audience enough time to read.
- Maintain eye to eye contact.

Advantages

1. Very common equipment
2. Easy to use
3. Can be prepared quickly
4. Transparencies can be stored.
5. Enable effective interaction with the audience
6. Can be used over and over again
7. Maintain eye contact with the learners.
8. Not require the room to be blacked out
9. The OHP is also clean, quiet, and 'user friendly'
10. Requires no technical skill or knowledge on the part of the operator
11. Materials can be prepared at short notice.
12. On spot addition or alteration possible.

Disadvantages

1. Requires power supply
2. Can be noisy
3. Light can distract
4. Can look low-tech.
5. Needs Maintenance.
6. Liable to break down.

POWER POINT

Introduction

Robert Gaskins and Dennis Austin invented PowerPoint in the year 1987 and sold it later to Microsoft. PowerPoint is widely used by business people, educators, students, and trainers and among the most prevalent forms of persuasive technology.

Following are the preferred guidelines towards preparing power point slides.

1. Presentation Design

a. Don't overload your slides with too much text or data.
b. Let the picture or graphic tell the story. Avoid excess text in the slides.
c. Number your slides and give them a title.
d. You can add a logo and other graphics to every slide using the slide master feature.

Visual elements

a. The title default size is 44. Use a san serif font for titles.
b. Use contrast: light on dark or dark on light.
c. Graphics should make a key concept clearer.
d. Place your graphics in a similar location within each screen.

Text

a. Font size must be large enough to be easily read. Size 28 to 34 with a bold font is recommended.
b. It is distracting if you use too wide a variety of fonts.

Numbers

- If you have more than 12-15 numbers on a slide, that's probably too many.

Statistics

- Use the same scale for numbers on a slide. Don't compare thousands to millions.

Charts

a. Charts need to be clearly labeled. You can make more interesting charts by adding elements from the drawing toolbar.
b. Numbers in tables are both hard to see and to understand. There is usually a better way to present your numerical data than with columns and rows of numbers. Get creative!
c. PowerPoint deletes portions of charts and worksheets that are imported from Excel, keeping only the leftmost 5.5 inches.

Backgrounds

a. Backgrounds should never distract from the presentation.
b. Backgrounds that are light colored with dark text, or vice versa, look good. A dark background with white font reduces glare.
c. Consistent backgrounds add to a professional appearance.
d. For a long presentation, you may want to change background designs when shifting to a new topic.

Excitement

a. Sounds and transition effects can be annoying hence use them sparingly.
b. Animation effects can be interesting when used in moderation.
c. Too much animation is distracting.
d. You can insert video and audio clips into PowerPoint**.**

Advantages

1) It works best for things that are presented visually, not verbally
2) It is easy to create visuals.
3) Can add notes pages
4) Can easily add media and recordings
5) Master slide make presentation consistent.
6) More exciting than a simple word document.
7) Excitement in audience about what slides will reveal.
8) Can show videos, pictures which help understand the subject better.

Disadvantages

1) It masks the thought process.
2) It gives the outcome, but removes the process.
3) It takes too much control away from the presenter.

4) Instead of a visual aid for the speaker, the speaker becomes an audio for the slides.
5) Non verbal cues like eye contact, posture are lost.
6) Animations distract audience
7) Soft ware conflicts may be barrier to use in different computers
8) Needs constant power supply
9) Projectors are very costly.

Do's

1) Understand your target audience before presentation
2) Simpler the slide, much is achieved.
3) Use power point for visual information.
4) Avoid distractors and animations.
5) Put one concept in each slide.
6) Include more images that excess text
7) Spell Check before projection

Don't's

1) Read slides made by others.
2) Over load slides with excess of information.
3) Add too much effects.
4) Use too bright colours.

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9 MULTIPLE CHOICE QUESTIONS (MCQS)

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During our students days, we have felt a lot of dissatisfaction over the marks awarded to us in essay type questions. Most of the times, it is that marks do not reflect the true capability. Some studies conducted to assess the marking of essay type questions have shown that there may be a difference of as much as 25% marks between two examiners, which in effect means that the same candidate may be failed by one examiner and awarded distinction by another. There are ways and means to check this kind of discrepancy. However, they are time consuming and given the constraints of time, very few teachers would be willing to assess essay type questions using accepted methodology that is by using model answers. Even if the essay type questions were to be evaluated by the recommended method, it would take a long time to rebuild faith of the students in such a system of examination. Besides being liable to be subjective marking, essay type questions also have another limitation and that is the number of questions that can be asked within the allotted time. Thus even with careful and planned marking, essay questions are bound to have a low reliability.

Against this background, multiple choice questions offer a distinct advantage of being more reliable not only because of a predetermined correct answer but also because of the more contents being tested, easy to mark and can be used on repeated occasions. They provide the wider sampling of subject matter.

MCQ's are being increasingly used for the last two decades for formative and summative assessment. The aim of evaluation is to assess students

achievements as well as efficacy of the teaching programme. The assessment should be able to classify students into categories of bright, passable (or acceptable) and below standard. It should serve as a feedback to both teachers and students indicating areas of strength or weakness. Scoring in MCQ's is not simple and involves many complex issues. Different methods are applicable to different types of MCQ's. However, the correct answers are predetermined and a candidate gets the same marks in the hands of all the examiners for a given question. In that respect, marking of MCQ's is considered simpler as well as more objective than marking of essay type, short essays and short answers. A basic question that confronts MCQ test constructors (examiners) and students (examinee) is how to judge the quality of the test.

In the field of education, objective evaluation is becoming more important for both summative & formative assessment. One of the most commonly adopted methods of objective assessment is Multiple Choice Questions (MCQ). MCQ are used globally for assessment in various fields of education. MCQ are also used for undergraduate & postgraduate entrance examination including medical, technical & other fields.MCQ are commonly used in entrance examination due to the logistical advantage of being able to test large number of students & broad range of knowledge in short period of time. MCQ also lends the possibility of flexibility during online examinations by drawing questions on random from the question bank. As large number of MCQ can be developed for a given content area, which provides a broad coverage of subjects that can be tested consistently, which would enhance reliability of assessment. If MCQ are drawn from a representative sample of content areas that constitute pre-determined learning outcomes, which would ensure a high degree of test validity. Critics of MCQ argue that MCQ are unable to test higher level learning. This criticism is more often attributed to flaws in the construction of the items rather than to their inherent weakness. Appropriately constructed MCQ can result in objective testing that can measure knowledge, comprehension, application and analysis abilities. Genuine issues related to MCQ are that, they are difficult and time- consuming to construct especially in cases where higher order cognitive skills are being assessed. Cueing effect can result in guessing & can lead to failure in accurate interpretation of scores & impact an assessment, hence items must be constructed free of such flaws & should be able to discriminate between good & average/poor performer.

Why do we need good MCQs?:
Faulty items interfere with accurate and meaningful interpretation of test scores. This can have an adverse impact on student pass rates. Therefore, to develop reliable and valid tests, items must be constructed that are free of such flaws.

Components of MCQ:

- Item - The entire unit of MCQ which consists of a stem and options.
- Stem - Question, statement or lead-in to the question.
- Alternatives/Options/Choices - The choices that follow the stem
- Keyed Response - The correct option/options
- Foils/distracters –Incorrect choices /options

Different Formats of Multiple-Choice Questions:
Single Correct Answer/One best response type/Type A:

- This is traditional and the most frequently used type of MCQ.
- A series of 5 choices is preferred to a series of 4 as it reduces the chances of random guessing.
- Instructions to the examinee emphasize the importance of selecting one best response among those offered.
- The usual time permitted for this format is 40 to 50 seconds per question.
- Most common format
- Usually tests only recall of facts
- Can be constructed for problem solving abilities, interpretation or analysis
- Difficulty – to find plausible alternatives
- Items of the negative type of single best response - Student is directed to identify either the alternative that is an incorrect answer, or the alternative that is the worst answer.

Multiple completion type (Type K) Response:
Here the candidate is instructed to separately respond to each of four or five choices so that any combination of right and wrong may be permitted. This is the common format used in UK for the PLAB and fellowship examination for Royal societies. The time required to answer each question is about 70 seconds. This format has several advantages. The usual restriction in demanding / testing extreme situations such as

"the best reason" or "the most accepted cause" etc, which are often debatable can be left out. However this format needs care while formulating. If not, this may test only recall and the stem may be short and implicit.

- Two or more of the alternatives are keyed as correct answers & remaining alternatives serve as distracters.
- Answers with the help of standard code – A if 1,2& 3; B if 1& 3; C if 2 & 4; D if only 4 & E if all are correct
- The student is directed to identify each correct answer.
- Can be scored in different ways.
- Scoring done on 'all-or-none basis' or scoring each alternative independently.

Multiple True / False completion type (Type C):
Multiple true false format consists of a stem followed by 4 or 5 true of false statements. The stem may be in the form of a question, statements, case history or clinical data. Each of the completions or statements offered as possibilities must unequivocally true or false (in contrast to single best response) This type of question should be written so that no two alternatives are mutually exclusive. Instructions should be clearly given at the beginning of any section in which this format occurs in the test and if possible, an abbreviated code should be given at the top of every page.

- Most common format in PLAB

Relationship analysis type (Type E):
These are variation on the basic true/false question form. Each item consists of an assertion linked to a reason by the connecting because. The examinee has to decide whether theassertion or reason are individually correct or not and if they are both correct whether the reason is the correct explanation of the assertion. This type is among the most hotly debated of all objective items largely because of the amount of language comprehension involved. This reduces the likelihood of correct responses for certain examinees. As a result many examiners reject these items even though they test the higher cognitive domains. If properly used they have the ability to discriminate among students at higher levels of ability.

The usual time permitted for this format is 50 seconds per question. Another reason why this format is becoming unpopular is the difficulty in scoring.

- Two statements are asked to respond by choosing –
  - A, If both statements are true & casually related
  - B, If both statements are true & not casually related o C, If the first statement is true & second is false
  - D, If the first statement is false & second is true o E, If both statements are false

Matching the Following Type:
This consists of two lists of statements, words or symbols which have to be matched with one another with specific instructions. The two lists may contain different number of items. These formats are well adopted for measuring relationship between large amount of factual information in an economical way. However, it is very difficult to test any higher level of ability with this format.

- Less commonly used
- Number of choices on right side should be more than left side.

Validation – two stages:
1. Pre-validation –

This exercise is done before the examination. A committee consisting of three or four members, two of whom should be subject experts other than the person who has set the MCQ paper, goes through the paper to assess the relevance of the contents and construction of the each question. Only those questions which are found to be appropriate by this committee should be used in an examination.

- To avoid inclusion of defective items
- Steps in pre is validation are – relevance to learning outcome, clarity, appropriateness, level of cognition, grammar of construction

2. Post –validation (Item analysis)

- This is done after a test has been conducted and scored, But before the results are announced.

- Post validation is also a team effort in which two or three teachers involved in the administration of test should take part. Several different processes and indices of item quality have been developed. These include:

1. The difficulty of the item (difficulty index or facility value)
2. The discrimination power of the item (discrimination index)
3. The effectiveness of each alternative (distracter functionality or effectiveness)

Construction of items based on Bloom's taxonomy:
Apart from the guidelines mentioned above, knowledge of Bloom's taxonomy is certainly an added advantage for item writers. It can serve as a guide to construct more stimulating items. Assessment items developed using this framework will include a range of levels and thinking processes (Haladyana and Downing, 1989). Keep in mind that we want our students to think, make connections, question the information included in the problem, process the information, and reflect on their answers. Each category requires more complex thinking than the one preceding it and incorporates the preceding types of thought in order to proceed to the "higher levels".

Use of AOTA (All of the above) and NOTA (None of the above) deserves a special mention as they seem to be most commonly used (abused) in our MCQ papers.

MCQs for integration:
Most of the Indian medical colleges follow the conventional discipline based approach. An attempt to rope in horizontal and vertical integration from certain corners is a laudable effort. It is a welcome sign that our medical teachers have started debating and discussing problem based learning (PBL) and case based learning strategies; some even daring to implement them. However these strategies are often demanding in terms of infrastructure and logistics. Instead, one may consider using MCQs to integrate across various disciplines. Carefully constructed MCQs can cut across disciplines and probe the critical thinking and reasoning skills of the students examined (Azer, 2003). The EMQs and assertion reason types are excellent strategies in this context.

Using MCQs in an intergrated format where a conventional discipline based curriculum is followed should be done with proper planning and extra caution. It will be wise enough to address these issues before you embark on this daunting task.

General guidelines for writing good MCQ: Procedural Guidelines:

- Corporate rather than individual efforts is desirable in preparing MCQ's.
- Individuals write questions on the basis of initial guidelines and stated educational objectives.
- Is the level of difficulty/discrimination appropriate.
- Clear instruction for the process of marking the right choice/choices on the answer sheet.
- Include MCQ of varying levels of difficulty.
- Format the questions vertically, not horizontally (i.e., list the choices vertically)

Content-related rules:

- Cannot test motor skills like communication skills, psychomotor and interpersonal skills.
- Question should be based on student learning objective of the course.
- Focus on a single problem or idea for each question.
- Keep the vocabulary consistent with the students' level of understanding.
- Avoid providing cues from one question to another; keep each question independent of one another.
- Use examples from course materials as a basis for developing your questions.
- Avoid overly specific knowledge when developing questions.
- Avoid verbatism phrasing when developing the questions.
- Use multiple-choice to measure higher level learning/knowledge. Stem construction rules:
- Is it clear, concise and unambiguous.
- Are double negatives avoided.
- Does it ask for an opinion.
- Does the stem deal with one or more important aspects of the subject.
- Appropriate for the level of knowledge expected of the examinee.
- Central problem stated clearly and accurately.

- Written with as few words as possible to make it clear and complete.
- Is the stem type the one for the particular point or problem.
- Is the stem written in conformity with the designated format.
- State the stem in either question form or completion form. The blank in completion questions should always be at the end of the stem.
- Stem directions should clearly indicate to students exactly what is being asked.
- Word the stem positively; avoid negative phrasing such as "not" or "except." If this cannot be avoided, the negative words should always be highlighted by underlining or capitalization: Which of the following is NOT an example .....
- Avoid giving clues such as linking the stem to the answer (.... Is an example of an: test- wise students will know the correct answer should start with a vowel)

Guidelines for Developing the Options:

- The proper number of choice must be grammatically correct and consistent with the main statement and with each other.
- Checked to avoid duplication and to be certain that one item does not give clue.
- Do all options complete the stem grammatically.
- Are they logical and plausible.
- Place options in logical or numerical order.
- Use letters in front of options rather than numbers.
- Keep options independent.
- Keep all options homogeneous in content.
- Keep the length of options fairly consistent.
- Avoid or use sparingly, the phrase all of the above & none of the above.
- Provide four to five options for each question.
- Phrase options positively, not negatively.
- Avoid distracters that can clue test-wise examinees.
- Avoid giving clues through the use of faulty grammatical construction.
- Avoid specific determinants, such as never and always.
- Position the correct option so that it appears about the same number of times in each possible position for a set of questions.
- Make sure that there is one and only one correct option in case of single response MCQ.

- The greater the similarity among alternatives, the greater the difficulty.
- Guidelines for Developing Distracters:
- Wrong answers should be sufficiently close to the right answer to serve as effective distracters but still not so applicable as the one BEST response.
- Silly or irrelevant answers fool nobody and have the effect of reducing the multiplicity of choice.
- A distracter is effective if more of the lower ability students pick it incorrectly as the correct answer and less of the higher ability students pick it as the correct answer.
- A distracter picked up as correct answer by less than 5 percent of students is a poor distracter.
- Use plausible distracters.
- Incorporate common errors of students in distracters.
- Avoid technically phrased distracters.
- Use familiar yet incorrect phrases as distracters.
- Use true statements that do not correctly answer the question.
- Distracters that are not chosen by any examinees should be replaced.

Distribution of MCQ's: Topics	No. of Items
Must know	70
Desirable to know	20
Nice to know	10
	100

Although the discussion has been rather long, it has been tried to show you some of the common pitfalls that can creep in while writing a good item. It is worth emphasizing that the time and effort spent in writing a good item is more than repaid in the long run.

Contrary to the notion that MCQ tests dumb-down higher order learning ideals, in many instances the literature strongly supports the fact that they are able to provide information about student's higher levels of understanding. If items are correctly designed these tests are no way inferior in assessing the depth and breadth of students' knowledge.

Medical teachers cannot abstain from objective forms of assessment. The only way out is to frame good items, evaluate them and appreciate their place in the field of written assessment.

10 ITEM ANALYSIS

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ITEM ANALYSIS: Development of strategies/procedures/steps to evaluate the quality of items (questions).

ITEM ANALYSIS

- Facility value synonym : item difficulty / difficulty index
- Discrimination index (item discrimination)
- Distractor efficiency
- PBS: Point Bi-serial Correlation

TEST ANALYSIS

- Reliability co-efficient
- Standard error of measurement

BANKING

- Item banking
- Ideal test
- Item levels
- Item cards

FACILITY VALUE

Synonym: ITEM DIFFICULTY / DIFFICULTY INDEX Number of students who answered the question right

FV: [HAG + LAG / N] X 100
HAG: Higher ability group
LAG: Lower ability group

Interpretation of FV
>85% easy item
50-85% moderate item
<50% tough item

Significance of FV
- Differentiates skilled / unskilled students
- Assess the knowledge
- Helps in setting better paper design

Recommendations
- Start items with FV>85% ie easy items

DISCRMINATION INDEX

It's the ability of a question to discriminate between skilled and unskilled students

DI = 2X(HAG-LAG) / N
Interpretation of DI
Range : 0 – 1
It extends from -1 to + 1
Recommended : > 0.25
Acceptable : 0.15 to 0.25
Discard item if DI < 0.2
Good item if DI is 0.35
DI having minus value are called " Negative discrimination"
Negative discrimination: if LAG answers better than HAG then DI value falls in minus value
Negative DI indicated either item is ambiguous or answer is wrong .
Significance of DI
Flaws in item can be identified
Improvements in item preparation
Misconceptions in learning can be identified
Quality and assessment.

DISTRACTOR EFFICIENCY

Distractor: options other than key is distractor
Good distractor: HAG not attracted to that option

Bad distractor : HAG attracted to that option

GOOD DISTRACTOR
LAG pick it as correct answer
HAG do not pick it as the correct answer
Should have a student reponse value of at least 20-30% POOR DISTRACTOR
Not picked by LAG
Picked by HAG
Student response value of < 5% for each distractor

Point Bi Serial Correlation
It's a parameter which gives information about the 'fit' of an item with the remaining test.

SIGNIFICANCE :
PBS helps us to identify items which are not testing the same domain as rest of the test

This helps to improve the validity and reliability of the tests

Calculated as a correlation between the score on that item with the total score on the test *minus* that item

PBS value ranges from -1 to +1.

A large value indicates that students with high scores on that test are also getting that item right.

PBS between 0.15 to 0.35 are acceptable.Uses of item analysis

Assessing the quality of items used in test.
Improving items which may be used again in later tests
Eliminating ambiguous and misleading questions
Enhancing instructors skills in the construction of flawless items
Identifying specific areas of course content which need greater emphasis or clarity
Provides data for helping students to improve their learning – common

error/ misconceptions/ remedial work
Provides insights and skills which lead to the preparation of better tests on future.

TEST ANALYSIS
RELIABILITY COEFFICIENT: refers to the extent to which the test is likely to produce consistent scores.

Characteristics of reliability coefficient

The inter correlations among items : high the relative numbers of positive relationships, high the reliability

The length of the test : more lengthy more reliability

Content of the test : diverse the subject lower the reliability.

STANDARD ERROR OF MEASUREMENT (SEM)
- It is the concept related to reliability of test.
- Depends on the number of items in a test
- Formula
- SEM : $.4\sqrt{N}$
- N: NUMBER OF ITEMS IN TEST
- It is an additional reliability statistic calculated from the reliability estimate

Banking
- Pool of questions
- Ability to deposit, discover & retrieve questions
- It includes
- The content area
- Learning outcome being measured using that particular item
- Marks allocated
- Time allotted to answer the question
- FV of the item
- DI
- Source of question
- Uses of question banking

- Well arranged collection of questions
- Well organized topic wise
- Minimizes time & energy required to construct a test
- Helps to chose right question for right examination like for assessing skills/entrance exams/subject
- Facilitates monitoring the performance of question across varying testing criteria
- Quality assurance of questions – test – examination
- Enhances skills of item writing & reviewing
- Provides transparency to the evaluation process – builds faith in examination system
- Helps in setting uniform standards of teaching and assessment

ITEM LEVELS

ITEM CLASS	FACILITY VALUE	DISCRIMINATION INDEX
LEVEL I (best)	45% -75%	+ 0.2 or HIGH
Level ii (very easy)	76% - 91%	+0.15 to + 0.20
Level iii (very difficult)	25% - 44%	+0.10 to + 0.15
Level iv (too easy / too difficult)	< 24% / >91%	Any discrimination

IDEAL TEST

- Level i : 70%
- Level ii : 20%
- Level iii : 10%
- Level iv : never include

ITEM CARD

- Subject : Pathology
- Type Of Question : One Best Response
- Reference Number : 1
- Topic : cell injury
- Time of answering : 1 minute
- Mark : 1
- Prepared by : .....
- Question : ...?
- Answer : a/b/c/d
- Key : a

ITEM BANKING

REF NO	DATE	GROUP	SIZE OF GROUP	CHOSEN ANSWER	FV	DI	LEVEL
1	15.1.15	100	HAG (25)	A/B/C/D	57	0.45	I
			LAG (25)				
2	25.1.15	100	HAG (25)	A/B/C/D	62	0.5	I
			LAG (25				

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Item Analysis:

- Ciraj A M Item analysis and question banking. Principles of assessment in medical education JP publishers 3rd edition 2012:116-125.
- Tejender Singh, gupta p, daljit singh. Test & item analysis, Principles of Medical Education JP publishers 4th edition2013:108-116**.**

SOFTWARE

- Remark office optical mark reading – scan /print export the data to SPSS data format
- Teleform 5 – Optical character recognition/ optical mark reading – store your data as an SPSS data file
- Statistical package for social sciences (SPSS) data entry

FURTHER INFORMATION

- Validation and Item Analysis of MCQ'S by dr Kusum Verma, Professor of Pathology,AIIMS, NEW DELHI
- Engaging Academics with a Simplified Analysis of their MCQ Assesment Results by Geoffrey T Crisp & Edward J Palmer , University of Adelaide, Journal of University Teaching & Learning Practice Vol 4 (2),2007 88-106

11 LONG ESSAY QUESTIONS AND SHORT ANSWER QUESTIONS

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Essay Questions-

Long Essay is one of the most effective ways of ascertaining how good a student is at – constructing a complex response to a challenging question. When constructing essay questions, it is essential to define the criteria on which the answers will be judged. A common pitfall is to "over-structure" these criteria in the pursuit of objectivity, and this often leads to trivialising the questions. Some structure and criteria are necessary, but too detailed structure provides little gain in reliability and a considerable loss of validity. Essays involve high costs, so they should be used sparsely and only in cases where short answer, open ended questions or multiple choice questions are not appropriate.

Most commonly these are used to evaluate a type performance, which can't be measured efficiently by other methods[e.g. summary of document, comparison of two phenomenon, find the relationships]

On this basis this concept Long essay can be delivered in two contexts- **unseen and seen**

In the **unseen** a question is prepared and delivered denovo to students under examination.

In the **seen,** students are provided with a topic and given a time limit in which to address the question. In the unseen examination critical components of successful essay depends the memory {short+ long term} of the student.

Essay quality also depends on –

1- The ability of a student to construct sentences of appropriate length
2- Grammatically correct sentence
3- Organize their knowledge in a way that addresses question correctly.

Previously there was a practice, where in one single question to be answered in 3 hours.

Of late there is change in the traditional essay type to answer with reasoning and expression.

e.g- Tradition style: -1. write an essay on Health for all by 2000.

2. write an essay on family planning.

Modern style:-

1. Explain the concept of HFA by 2000AD and way & means of achieving it in India.
2. How would you organize a F.P. camp in a taluk head of your district.

Advantages –

1. Easy to construct
2. Framing of question is not difficult
3. Allows free and effective expression (open question)
4. Tests knowledge gained by learner
5. Brings out learner's reasoning capacity
6. Also brings out organizing ideas & planning.

Disadvantages-

1. Range of application of knowledge is limited to topic.
2. Questions lack objectivity
3. Time consuming(1hr) affects improper scoring system
4. Important error in long essay is- Halo/ Antihalo effects.

Halo effect: 1st answer in an essay type is so good that it influences evaluator for positive scoring to subsequent answers.

Antihalo effct: 1st essay answer is so bad that it influences evaluator for negative scoring for subsequent answers.

5. Due to literary ability & handwriting of the student examiner bias occurs.

Guidelines for making an essay question:

1. Employ terms that cover the cognitive process that you are expecting to be used in answer. Such as "summarize or compare", "evaluate" or "define" **rather than "**discuss, state", examine".
2. Limit the problem posed, so that it is clearly apparent to the candidate. Define the structure of the answer, describe the task clearly.
3. Have syllabus on hand & view it fully. Select a few topic in random to have good coverage.
4. Have check list & specific points for a good marking system, for every question construct a model answer or list the essential features expected.
5. Allow no choice among questions set [suggest no options].
6. Avoid complex language , such as double negatives, abbreviations.
7. Choose a problem or issue that can be addressed satisfactorily in the time allocated.
8. Give equal weight age to all topics[not too easy/ too difficult]
9. Questions should have clarity and standardized, without repetition.
10. Proofread the paper three times, using a different reader each time.

E.g. -

1. Describe composition, Mechanism of secretion and regulation of gastric gastric juice. Add a note on peptic ulcer. [10]
2. Define arterial blood pressure. Discuss neural regulation of blood pressure. Add a note on hypertension. [10]
3. Define epidemiology. Enumerate its uses. Outline the general methods of control of diseases with known etiology [10].

Evaluation of long question-

1. Use a point system of scoring based upon those elements that are expected to appear.
2. Mark the papers anonymously to conceal the student identity.

3. When two or more teachers correct the same test, they should agree on the scoring procedure before and correct the papers separately.
4. Score the answers of the entire student to one question, before going on the scoring of another question- to avoid halo effect.

How to make an essay question objective?

To overcome this drawback there are two common methods of structuring of an essay questions

1) Modified essay questions[M.E.Q]
2) Patient management problem[P.M.P]

M.E.Q- first developed in Australia & UK to overcome the major restrictions of sampling & scoring pertaining to traditional essay & patient management.

It presents a logical sequence of short answer questions, relating to an initial scenario or clinical problem. The questions can be- history taking and differential diagnosis or Line of management of a case or Investigation for a disease.

Which tests the integration of relevant knowledge in examinees intended action .Items must be attempted in strict sequence, without previewing the outcome of the problem.

While setting MEQ care must be taken to avoid any cues in questions. This can be avoided by computer presentation of the segments of MEQ. Model answers will help to evaluate better.

Advantage- MEQ allows high cognitive learning and at each setting there is scope for improvement in the knowledge.

Constructing a MEQ-1)decide first on the type of objectives that you wish to address- diagnosis, patient management etc, 2) How far it is possible to design the specific case without risking cueing? 3) Avoid vaguely worded questions.

E.g-1] Mrs. Brown, a 38 year old primary school teacher, complaints fatigue, tachycardia. She has been admitted to general medical unit on which you work, for further investigation.

Q1- what are the three most likely observations?

Q2- list 5 specific questions that would help you distinguish between these possibilities?
A routine blood test reveals microcytic hypochromic anemia with Hb 9.8gm/dl.

Q3- List two typical signs you would look for when you examine the patient.

Q4- Did this information affect your 1st diagnosis? If yes, how explain briefly? In this e.g. computer delivery or physical removable of the answers to Q1,2 would be required before giving the information regarding anemia and asking Q3,4 to avoid both backward & forward cueing.

Q1-2 test the broad knowledge of such clinical presentation & initial diagnostic strategy requires understanding of clinical significance of scenario. Q3- tests linkage between data from investigation & subsequent questioning. Q4- Vague, which one of the Q1's three most likely diagnosis does Q4 refers to?

e.g. 2] Mr. J. Mathura is aged 26 and has recently diagnosed with mild essential hypertension. Since his hypertension is mild he is not keen to commence drug therapy, you decide to commence a trial of dietary therapy.

Question

a) Discuss the role of dietary sodium restriction in the treatment of hypertension
b) Include epidemiological data supporting or refuting its use as well as evidence of its therapeutic effect. [This is testing trainee's understanding of basic science in relation to a clinical problem]

E.g. 3] short essays- cardiac output: Definition, normal value and factors affecting it (05)

4] Explain the functions and regulation of secretion of growth hormone (05)

Patient Management Problem {P.M.P}

Here simulated patient management skill is assed. It will help a learner in decision making. It also makes up the gap found in textbook learning, gives opportunity for patient care in emergency case handling, critical case handling and advanced ill case handling, casualty trauma, burns.[By verbal description, creating a model, creating a mannequin or by writing down clinical situation].

Written assessment format-

1. **Method-** constructed – response format for [**Essay**]

Typical university essay, either seen/ unseen, where writer is required to describe, discuss and propose new perspectives on one or more issues. Answer may or may not be predetermined.

Domain / response mode- any situation where lengthy explanation is required, detailed synthesis of information; interpretation of literature; evaluation of management options is needed.

Design factors-questions can vary from blindingly obvious to the very obscure. Getting questions right takes time. Model answers/ protocols help marking.

Limitations- task may be misinterpreted. Long testing time for topic, limited coverage possible. Reliability variable, susceptible to candidate bias.

Strengths- total flexibility in question setting, Can avoid cueing. regarded as using higher order cognitive processes.

2. Method-constructed- response format for **[Modified Essay]-** Specifically developed for medicine with track record in general practice. Highly structured case followed by questions on any aspect. Focused on candidate's management of a case. Answers usually predetermined.

Domain and response mode- clinical management issues. Some cue identification/ reasoning required to link eg. Signs, symptoms to investigation and management.

Design factors- can move from one stage of clinical management to another easily [diagnosis to patient management in same case]. More efficient sampling of a wide area of knowledge possible.

Limitations- need careful design to avoid cueing. As a result can be patchy in sampling knowledge across cases.

Strengths- can demand a wide range of cognitive processes. Can avoid cueing. May be machine scorable in 5-10 years.

SUMMARY

1. Essay type questions have a distinct place in the assessment of cognitive skills. They are primarily used to assess learning outcomes of a higher level such as problem solving ability, which cannot be tested by other methods.
2. Open ended essays have severe limitations. They have little role in medical education.
3. Structured essay questions have several positive attributes. They have good reliability. They can be adapted to improve validity and to test problem solving ability.
4. Structured essay questions used in conjunction with checklist ensure a reasonably high objectivity.

Short answer questions (SAQ)-

Frequently these are used as a means of measuring student's factual knowledge or understanding, for e.g in lectures/ ward rounds.

In the verbal form they tend to be quite short, with in a specific context. Example-what is the most common feature of diabetic retinopathy we are likely to see in this patient?

Other major use if SAQ's is in assessments. Various methods exists, requiring the test taker to – complete the sentence or supply a missing

line[Cloze test], give short descriptive or analytical answers or diagrams. Such questions can demand a wide range of responses, one or several words to paragraph to page.

Advantage-

1. unlike the MCQ's they require the students to construct the answer rather than choosing / guessing from provided options .thus avoiding cueing.
2. Easier to mark than essay questions, usually involve a structured marking sheet.
3. One word answers are computer scorable but more than a few words requires a marker.
4. Items should be marked with assessors blind to the identity of candidates, different examiners allocated to different questions. In this way examiner bias is diluted for each candidate.

TYPES OF SAQs

The common forms that SAQs can take are the following:

1. **Completion items:** These consist of incomplete statements,the examinee having to supply the missing words, terms, symbols etc. These are also commonly called 'fill in the blanks' type of questions.
2. **Definitions :** Anemia, cardiac output, GFR, ovulation etc.
3. **Unique answer type**: These take the form of actual questions, the examinee having to supply a specific answer.
4. **Label/draw diagrams**
5. **Numerical problems**: While numerical problems can be presented as multiple choice test items, they are more often Presented in short answer form. Numerical problems provide the basis for a wide variety of test items in medical sciences where values of concentration of essential components within tissues and body fluids need to be learnt and in any field of study where exact quantitative relationships are required to be developed. The answers to numerical problems are usually concise and hence easy to score.
6. **'Open' SAQs**: These are similar to unique answer questions except that they allow for some variation in the nature of the answer, either in terms of its intrinsic content or in terms of the way in which it is expressed, e.g. list advantages/disadvantages/indications, give examples, etc.

7. **Problem solving items:** If SAQ approach is felt to be appropriate, it must be decided, which particular type of SAQ item will be most appropriate for testing various topics and skills.

Guidelines for constructing short- answer questions(SAQ)-

1. Choose the most appropriate SAQ format for the objective- a Cloze or completion item, an open word or phrase answer.
2. Identify the specific learning objective the item covers, generally in the area of factual recall, comprehension, application or analysis.
3. Question should be clear, unambiguous and with simple language.
4. A good SAQ tests factual knowledge or capacity to analyze and clinically interpret a scenario.
5. It is good practice to give the test taker an indication of length of answer required/ allocated marks for that question.
6. Where a numerical answer has to be supplied for e.g calculation based on clinical data indicate both- a] degree of precision expected and b] the appropriate units to be indicated.

In SAQ's cognitive task set to the test taker is more important than response format. In medicine SAQ's have been used successfully as a reliable alternative to MCQ items in a progress test in Netherlands(R) and SAQ tests could produce better retention of information over time.

Short answer –open ended questions-this is an open ended question, which requires the candidate to generate a short answer not more than one or two lines. e. g –which muscle origin is affected in the condition of 'tennis elbow'?

This involves series of questions drafted in such a way that the answer calls for a predetermined & precise concept. The answer expected is short & open (can be expressed in different forms)The author of the question must define in advance (in cooperation with colleagues) the answer, called for by the wording of the question.

If it appears that – by concept different answers will do for a given question, and then it should be rearranged until the drawback disappears.

Short open – answers are also called "**restricted response tests**"

A set of short, open answer questions preceded by a case history is called- "modified essay questions". Open ended questions are more flexible—in that they can test Issues that require, for example, creativity, spontaneity—but they have lower reliability. Because answering open ended questions is much more time consuming than multiple choice Questions, they are less suitable for broad sampling. When writing open ended questions it is important to describe clearly how detailed the answer should be—without giving away the answer. A good open ended question should include a detailed answer key for the person marking the paper. Short answer, open ended questions are not suitable for assessing factual knowledge; use multiple choice questions instead.

Short answer, open ended questions should be aimed at the aspects of competence that cannot be tested in any other way.

Written assessment formats

1. **Method**- constructed- response format-

Short answer (SA)- A short question that asks for a constructed specific answer, requires usually one word or short phrase, aline or two of text. Answers mostly predetermined.

Extended short answer(open ended): a question that asks for an extended answer, usually requiring a paragraph. May address different aspects or extension of the issue. Answer may be predetermined.

2. **Domain and response mode**: **SA** - recall specific facts or statement about biomedical or clinical processes. **exetnded SA**- recall of groups of concepts or short explanations.

3. Design factors: SA -simple to construct, can sample widely different domains knowledge easily. **Extended SA** - can sample widely different domains of knowledge in more depth than SA.

4. **Limitations: SA-** wide varity of formats and little research on their use / psychometric properties, can lead to cueing.

Extended SA -same as above, scoring more difficult, involves multiple attributes of answers involved in essay construction. Recent research can give more insight into level of functioning of candidate.

5. Strengths: **SA**; Scoring by machine becoming a reliaty. Can replace MCQ's, where recall is thought to be vital(decisions based on core knowledge and experience).

Extended SA; total flexibility in question setting.

Conclusion- written test like SAQ, MEQ and LEQ have common advantage to medical teachers interested in measuring how well a examinees can integrate and apply clinical knowledge without the patient or examiner being present.

Short answer questions are more versatile to set ; provide comprehensive sampling of knowledge, and easiest to mark.

Modified essay, long essay questions, however have the capacity to present/ or require a systematic outline of an examinee's approach to solving or managing a simulated problem.

Procedures have been recommended for construction of these tests which should make them more valid & reliable. It will improve the educational value of any written examination for both examiner and examinee. Choosing the best question type for a particular examination isnot simple. A careful balancing of costs and benefits is required. A well designed assessment programme will use different types of question appropriate for the content being tested.

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12 OBJECTIVE STRUCTURED PRACTICAL EXAMINATION (OSPE)/ OBJECTIVE STRUCTURED CLINICAL EXAMINATION(OSCE)

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Specific Learning Objectives

- Introduction
- Organization
- Examples of OSPE stations
- Advantages & Limitations

Specific Learning Objectives:

- Define OSPE/OSCE
- Identify ways in which OSPE/OSCE differs from conventional practical /Clinical examination
- Realise the circumstances that necessitated introduction of OSPE/OSCE as an evaluation tool.(NEED)
- Define the qualities of good measuring instrument and state the extent to which OSPE/OSCE confirms to these qualities.
- Plan & organise the conduction of an OSPE/OSCE
- Identify the advantages & disadvantages of OSPE /OSCE from a practical point of view.

Introduction:

What is OSPE/OSCE?

It is an assessment tool in which various competencies of student are evaluated by using agreed checklist & rotating student through number of stations some of which have observer with checklists. History of OSPE/OSCE

An earlier innovation in this regard is the objective structured clinical examination (OSCE) later extended to the practical examination (OSPE). Described in 1975 .Greater detail in 1979 by Harden and his group from Dundee . The method was the subject of an international conference at Ottawa in 1985 when the worldwide experiences with OSCE and OSPE were exchanged

Why it is done?
Conventional practical/clinical examination is affected by
Variability in experiments selected
Variability in examiners
Subjectivity
Attitudes are not tested
Student's ability is not tested
Marks awarded reflect overall performance-Benedicts test

Therefore, adoption of a valid method for practical /clinical examination is needed for the evaluation as in OSPE /OSCE the process as well as the product is tested giving importance to individual competencies of students with Reliability a*nd thus overcome the above problems*

Organization of OSPE/OSCE
When & how it is done? For general experiments:
1. Identification of equipments / accessories
2. Procedure of experiment
3. Handling of equipments
4. Making observations / results
5. Interpretation of results

For clinical experiments
Historytaking
Physical examination,
Simple procedures,
Interpretation of lab results,
Patient management problems,
Communication,
Attitude, etc

Useful for the formative assessment

To improve the clinical competence

To derive an objective score for internal assessment **Useful for the slow learners as a teaching learning tool. Preparation of stations:**

What do you mean by the term STATION?

- In OSCE/OSPE the term STATION refers to each task assigned to the student.
- Based on the task assigned these stations can be classified as:

a. **Procedure Station:** The student is expected to perform a decided task in front of an observer who observes the student while doing the task and gives marks as per the provided checklist
b. **Response Station:** The student is expected to respond to certain questions, either based on the previous procedure station or chosen separately to evaluate areas of knowledge, interpretation, problem solving etc.
c. **Questions station**: are a type of Response stations, meant to test the knowledge part of the skills tested in prior stations.
d. **Rest Station:** These stations are meant to give a break to the students.
e. **Critical Station:** These stations are the must pass stations as they are meant to judge the most important and critical component of curriculum

Ideal OSPE/OSCE stations

- Ideally 15-20 stations
- Time for each station should not be less than 4 min
- All stations should be completed in the same period of time. Students are rotated through all stations.
- Types of stations
- Number of different type of stations need not be same

Examples of OSPE/OSCE stations:

Eg of procedure station-OSPE

- Task: Urine examination to detect urine sugar in the given sample.
- Time 5 minutes Marks -05

SL. No	Task	Marks
1.	Measure & take 5ml of benedict's reagent in a test tube	01
2.	Holding the test-tube with the holder, heat it over a spirit lamp till the Benedict's Solution boils without overflowing.–critical point	1.5
3.	Adds exactly 8 drops of urine	01
4.	Heat the test tube till boiling	01
5.	Records the findings correctly with grades	0.5

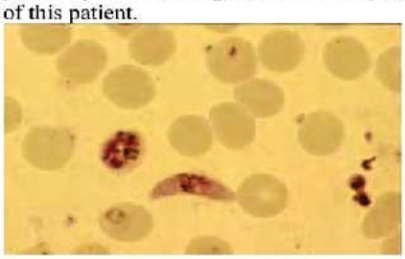
Eg of procedure station-OSCE

- Task: Examine the patient for clubbing
- Time 5 minutes Marks -05

SL. No	Task	Marks
1.	Does he see the nail profile?	01
2.	Does he palpate for fluctuation?-critical point	1.5
3.	Does he compare both hands?	01
4.	Does he examine the toes?	01
5.	Does he interpret correctly?	0.5

Eg of Response station.

14. A 17 year old boy has presented with a febrile illness which recurs every third day. The fever is high grade and accompanied by chills and rigors. This is the peripheral blood smear of this patient.



a) What abnormality is seen in this blood smear?
b) Name 2 drugs used in its treatment.
c) Name one important complication.

TOPIC SPECIFICATION: INFECTIOUS DISEASES

Plan of location of stations & direction of movements

- **Preparation of checklists**
- **List of students with Reg. No & answer sheets**
- **Brief the evaluator & students**
- **Supplementation of questions with chart, figures, photographs, specimen, tables etc**

Advantages of OSPE/OSCE:

1. All components assessed
2. Uniform level of assessment
3. Large number of skills can be assessed objectively
4. Wider sampling-most topics can be covered
4. Reliable method of testing
5. Tailor made assessment of skills as per importance
6. Minimum subjectivity
7. Recall bias minimized
8. Thus the whole process is well defined, planned, objective, and structured with good amount of control over the variables like the quality of student, the type of patient, and the mood of the examiner.

Disadvantages of OSPE/OSCE

1. Risk of observer fatigue
2. Requires proper planning
3. Preparation of procedure & response station in appropriate ratio
4. Preparation of ideal check list is difficult.(Critical Point/station should be kept in mind)
5. Requires proper briefing to student & team work
6. Breaking skills into individual components

Take a home message:

OSCE/OSPE is an assessment tool in which all possible components of clinical /practical competence. can be tested using agreed upon check lists.

This is the most effective way of reducing the influence of examiners subjectivity and allows for evaluation in the most ideal manner.

This method provides opportunity to provide feedback to the students which goes a long way in improving learning by the students.

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13 BED SIDE TEACHING

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Bedside teaching has long been considered the most effective method to teach and assess clinical skills and communication skills in learners. The credit of initiating the concept of Bedside Teaching goes to Sir William Osler. He introduced clinical clerkship for first time in history of medicine. He wrote "In what may be called the natural method of teaching, the student begins with the patient, continues with the patient, and ends his studies with the patient, using books and lectures as tools, as means to an end"[1].

A medical teacher starts teaching in medical college immediately after clearing master degree without any formal training in teaching. Apart from being clinician, he has responsibility to impart knowledge of clinical skills to learners and assess the learning process in terms of correct techniques and process being followed. The learner too has expectation from clinical teacher. In this context Irby DM [2] has suggested certain skills in a teacher to be excellent in bed side teaching.

They are

1. Share a passion for teaching
2. Are clear, organized, accessible, supportive and compassionate.
3. Demonstrate clinical competence
4. Utilize planning and orienting strategies.
5. Posses a broad repertoire of teaching methods and scripts.
6. Engage in self evaluation and reflection.
7. Are able to establish rapport; provide direction and feedback; exhibit integrity and respect for others.

8. Draw upon multiple forms of knowledge; they target their teaching to the learners level of knowledge.

Goals of Clinical Teaching[3]

1. Accumulate and recall information about patients
2. Perform complete and orderly physical examination
3. Perform skill procedure
4. Interpret data
5. Solve scientific and professional problems
6. Communicate information reliably
7. Develop familiarity with health care services and facilities
8. Develop appropriate attitudes to patients and allied health care workers
9. Accumulate factual healthcare knowledge
10. Acquire positive attitude to independent learning.

Why bed side teaching?

Off late many clinicians are of view that when accurate and rapid diagnostic methods are available for making a diagnosis in a given case, why spend time in history and physical examination?

This notion is not healthy for our profession and should be curtailed. Bed side teaching is of paramount importance since medicine is taught.

I refer to two "T"s to my students. One T stands for Talk to patient and another T is for Touch the patient. Both of the T will serve purpose of History taking and Physical Examination. Also use of special senses like Hearing, Smelling, Feeling and Seeing are of paramount importance in clinical practice and should be used in co ordination, so that more precise and accurate diagnosis is reached.

Now the scenario in clinical setting is changed. A person when is sick seeks home remedies initially, then gets drugs from medical shop, then from a quack , then from non allopathic doctors and then consults a physician. During this time the classical signs and symptoms of a given disease are masked or altered, which in turn leads to dilemma in diagnosis. In such situation a elaborate history and thorough clinical examination helps a clinician to reach a diagnosis.

Secondly, diseases like Epilepsy, Angina pectoris etc are more of a clinical diagnosis and only history taking will help reach diagnosis. Bed side teaching has been a boon for clinician and also benefits the patient.

Thirdly, claims are made that diagnosis is arrived only after relevant investigations are done, but the point lies in which investigation to order. This decision again requires a detailed history taking and physical examination.

Although advanced technologies are replacing bedside teaching, numerous studies have demonstrated that technology has not necessarily improved the quality of patient care, both in diagnosis and management. A study by Combes A et al [4] showed diagnostic error of 32% of patients despite extensive investigations. This study was done in 167 patients admitted in ICU and on autopsy the diagnostic errors were uncovered.

Another study by Kirch W [5], demonstrated that history-taking and physical examination are the most important factors in arriving at a correct diagnosis, where as lab tests and imaging studies play only minor roles.

Hence history taking and physical diagnosis which is learnt at bedside teaching serve as the foundation for all clinical decision making and their significance should not be discouraged or forgotten.

I quote Allen RB [6] "while in many cases laboratory findings are invaluable for reaching correct conclusion, the student should never be allowed to forget that it takes a man, not a machine, to understand a man.

There are four models currently used world wide for bedside teaching. All the four models are discussed here.

1. **MiPLAN**
2. **A Structure for Bedside Teaching**
3. **OMP Model**
4. **Best Bedside Teaching Practices**

MiPLAN [7]

It is a three part model for bedside teaching.

It is designed to enable clinical teachers to simultaneously provide care to patients while assessing learners, determining high yield teaching topics, and providing feed back to learners.

It was first described by Chad Stickrath in 2011[7].

MiPLAN is acronym for

M – Meeting
It refers to preparatory meeting between teachers and learners before engaging in patient care or educational activities.

I refers to five behaviors for the teacher to adopt during learners bed side presentations. They are introduction, in the moment, inspection, interruptions, andindependent thought.

PLAN

It is a algorithm to establish priorities for teaching subsequent to a learners presentation

Patient care, Learners question, Attending agenda and Next steps.

This model helps to increase faculty confidence in conducting bedside rounds and combines a number of patient care and teaching techniques.

2.A structure for Bedside Teaching [8]

First described by Cox in 1993

This model divides teaching activities in to three categories

1. Before the bedside
2. At the bedside
3. After the bedsideDeborah Gill [9] has added "Before the session" to ensure teacher and patient are fully prepared.

Before the session

Brief the patient:

Check what they are happy to discuss/expose. Are they happy with the number of students who will be involved in the session?.

Explain that these are learners and may suggest unlikely diagnosis etc.

Brief yourself:

Check the clinical findings; check that the students have not been taught on this patient already. Check that experience with this patient is appropriate for their needs.

Before the bedside

- Establish the students' knowledge base
- Brief the students –Ground rules of what to discuss and not, in front of patient
- What are they expected to be learning
- May even discuss that this patient has the following features to look out for.

At the bedside

Role model good doctor – patient relationship

Try to involve all the students all the time

Focus on clinical experience and less on pathology

After the bedside

Give constructive feed back to the students

Explain findings –what did the findings mean?

Which findings help discriminate between differential diagnosis

How do findings fit with diagnosis

Debrief the students-what did the students find

Did every one detect the key features? Any students uncertain?

Working knowledge –what should students do differently next time.

Thank the patient for being part of the learning.

3.OMP Model [10]

The One Minute Preceptor model

It is widely used method for improving clinical teaching

It was first introduced by Neher et al in year 1992.

It is used to impart clinical skills for both undergraduate and Postgraduate students

The main feature of this model is, the teacher first focuses on diagnosis of patient, then on diagnosing the learning needs of the students and finally provides targeted instruction in the context of this diagnosis.

This model has five components called microskills
It helps the mentor guide the teaching interaction. The five micro skills are

1. Get a commitment –ie ask the learner to articulate his/her own diagnosis or plan.
2. Probe for underlying reasoning- evaluate the learners knowledge or reasoning.
3. Teach general rules –teach the learner common take home points that can be used in future cases aimed preferably at an area of weakness for the learner.
4. Reinforce what was right – Provide positive feed back
5. Correct mistakes-provide constructive feedback with recommendations for improvement.

The first two micro skills assess learners' knowledge and reasoning and remaining three skills offer tailored instructions.

Advantages [11]
1. It is brief, easy to learn, improve key teaching behaviors
2. It overcomes lack of feed back
3. It enhances the clinical reasoning process of a learner

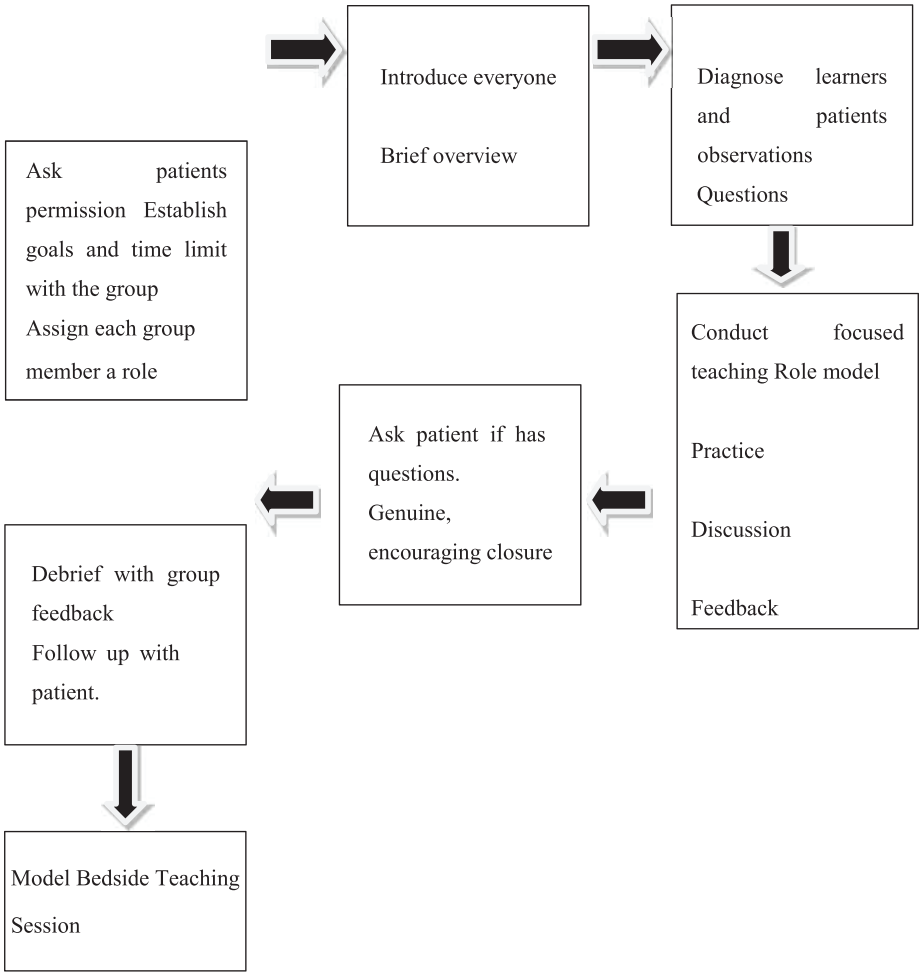
Disadvantages
1. Mainly used for final year undergraduates and postgraduates.
2. Not for teaching the skills
3. Preferred for outpatient setting.

4.Best Bedside Teaching Practices [12]
This model is developed by Janicik RW and Fletcher KE in year 2003. It has three domains and each domain has specific goals and skills.

1. Attending to patient comfort
2. Focused teaching
3. Group dynamics.

Goals of each domain

1- To remain patient centered and respectful, which will maximize outcomes for both learner and patient.
2- To conduct an effective teaching session in a focused manner that is relevant to an individual patients and learners need.
3- To keep entire group active during the session.



Attributes of an effective Clinical Teacher [9]

- Encourages active participation rather then passive observation
- Emphasis on teaching of applied problem solving
- Integrates clinical medicine with basic science
- Close observation of students during examination
- Provides adequate opportunity for students to practice skills
- Provides good role model for inter personal relationships with patients
- Teaching is patient oriented rather than disease oriented
- Demonstrates positive attitude towards teaching

Benefits of Bedside teaching

For students

1. Teaching rounds are memorable and motivating
2. Integration of theoretical knowledge with practical skills
3. Helps students see disease as an illness happening to a human being
4. By example they learn to become good doctor
5. Learn proper behavior

For Patient

1. It helps them promote communication
2. They feel their fears are addressed and anxieties soothed.
3. They appreciate that teaching is important function of hospital
4. Feel they are source of interest and concern too.

For teacher

1. It helps teacher to learn
2. It helps train future doctors.

Advantages of Bedside Teaching

1. It helps learn clinical skills
2. It also helps to directly observe skills in student and there by correcting faulty examination techniques.
3. It is an active learning process in which adults learns best.
4. It helps to gather more information from patient
5. It instills confidence in patient too.

Barriers that prevent teachers from venturing to teach at bed side.

There are many reasons why teachers are reluctant to teach bed side. Some of barriers are mentioned here by Janicik RW [12].

1. Fear of patient discomfort.
2. Lack of Privacy, Confidentiality.
3. Work demands and time constraints.
4. Patient related challenges- short hospital stay, patient too sick,or unwilling to participate in teaching encounter.

Bedside Teaching

Do's	**Don't's**
Teacher should arrive in time	Teach while there is meals, Cleaners or visitors are expected in wards.
Case for discussion should be informed to students in advance	Give derogatory remarks
Introduce yourself	Scold students in front of patients
Privacy of patient to be maintained while teaching examination skills	
Teachers should share their experience	Discuss theory
Teach	Expect answers from students which they don't know
Make sure all participants can see and hear you	
Involve all participants	Distractors – Mobile phone.
Listen	Interrupt the learner repeatedly
Problem oriented questions	
Give Feedback	
At end thank patient	

Conclusion

If a clinician ignores the very basic bedside teaching learning process, he is like to accept the illogical laboratory finding with question.

Bedside teaching can be made more interactive and fruitful if the session is learner centered and not using the session to demonstrate teaching eloquence on medicine.

"To study the phenomenon of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all "[13].

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14 IMPROVISING - LONG CASE EXAMINATION

Assessment in medical education is crucial to both student and the teacher. Assessment is incentive for learning. To promote learning assessment should be educational and formative.

Assessment methods that are used in undergraduate's medical education are broadly divided into Assessment of knowledge and its application like MCQs, essays and viva voce.

Assessment of clinical competence by long case, short case, viva voce

The practical /clinical examination is of key importance inassessment of clinical competence they play important role in the certification of candidate before they are allowed to practice medicine.

Why we want to evaluate?

- Assessment drives learning
- Observe competency for the job description.
- Correct the mistakes.
- Find out the adequacy of the curriculum

What do you want to evaluate?

The essential elements of clinical competence are

- Collection of clinical data by proper history taking and physical examination.
- Identification of patient problem
- Formulation of differential diagnosis
- Planning of investigations
- Management
- Demonstration of adequate communication on skills, attitude

towards patients
- Professionalism

Five required attributes to assessment process
- Reliability – measure of reproducibility or consistency or variation scores.
- Validity- does the evaluation tool really test what is intended to test?
- objectivity-will scores obtained by candidate be same if evaluated by two or more examiners?
- Acceptability- The degree to which assessment process is acceptable
- Educational impact- The degree to which assessment can assist student to improve his or her performance.

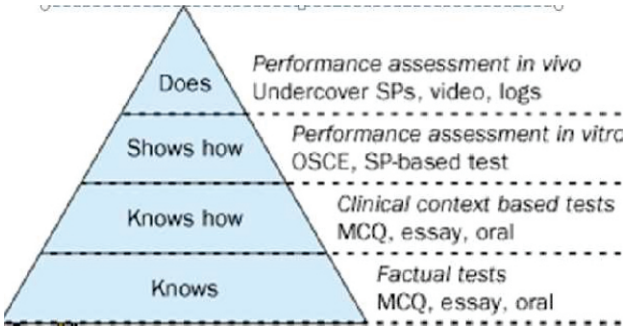
The traditional practical examination pattern consisting of one long case, two short cases and viva voce has many draw backs where large number of students are examined in short period of time.

This method of exams lack validity, reliability, objectivity if not conducted properly in organised manner keeping in mind the learning objectives.

Long case examination
There has been justified criticism of long case in which different examiner examines different candidate on different patient. This has been rightly referred to as 'Luck of draw'

Drawbacks of long case exam,
Long case examination exist on "luck of draw"
- Communication skill is not observed
- Process of achieving result is not observed
- Product is assessed
- Discussion frequently on theory
- Approach and expectation vary with individual examiner
- Thus it lacks reliability, validity and objectivity

Miller's Pyramid of Competence



- The assessment of clinical skills/competence/performance.
- To improve the validity and reliability of assessment of many aspect of clinical competence new assessment tools are discovered.
- 1979: Harden and Gleeson developed the OSCE
- 1997: Gleeson developed the OSLER
- OSCE: Assessment of predetermined clinical components.

Here examination is organized to all students on identical content by same examiner using predetermined guidelines followed by feedback from student and teacher.

OSCE is meant to test shows how level of Miller's pyramid

Advantages:
More valid, reliable and maintain objectivity Wide ranges of skills are tested.

Disadvantages
Student knowledge and skills are tested in compartments and he is not tested in his ability to look at the patient as whole

OSLER- Objective Structured Long Examination Record.
Ten item analytical record form.

– 4 items for history taking, 3 items on physical examination, 1 each for formulation of investigations, management and clinical acumen in a logical sequence.

All candidates are assessed on the same ten items.
Time is 20-30 minutes for the examination.
Items are representatives: whole process.

OSLER's components:
History taking

- Clarity of presentation, communication process, systematic approach, establishment of case facts.

Physical examination

- Systematic approach, examination technique, establishment of correct physical findings.

Assessment of clinical acumen

- Ability to identify and solve problems

Standardizing the long case based on the difficulty of the case:

Standard case

- Single problem

Difficult case

- Up to three problem

Very difficult case.

- More than three problem

Awarding marks in the OSLER:

P+ : Very good/excellent. (60-80%0
P : Pass/ bare pass. (50-55%)
P- : Below pass

- Each items has to be graded followed by overall grade of the complete performance

NAME EXAMINATION NO.

Examiners are required to GRADE each of the ten items below and assign an overall GRADE and MARK concerning the candidate PRIOR to discussion with their co-examiner as follows:

EXAMINER: .....

CO-EXAMINER: .....

GRADES		MARKS	
P+ =	VERY GOOD/EXCELLENT	(60-80+)	See over page
P =	PASS/BORDERLINE PASS	(50-55)	for specific
P- =	BELOW PASS	(35-45)	mark details.

	GRADE	AGREED GRADE
PRESENTATION OF HISTORY		
PACE/CLARITY →		
COMMUNICATION PROCESS: (history e.g. CVS, investigation e.g. endoscopy, management e.g. patient education) →		
SYSTEMATIC PRESENTATION →		
CORRECT FACTS ESTABLISHED →		
PHYSICAL EXAMINATION		
SYSTEMATIC →		
TECHNIQUE (including attitude to patient) →		
CORRECT FINDINGS ESTABLISHED →		
APPROPRIATE INVESTIGATIONS IN A LOGICAL SEQUENCE (Communication Process option) →		
APPROPRIATE MANAGEMENT (Communication Process option). →		
CLINICAL ACUMEN (Problem identification/Problem solving Ability). →		

ADDITIONAL COMMENTS:-

Please Tick (✓) For CASE DIFFICULTY

	Individual Examiner	Agreed Case Difficulty	INDIVIDUAL EXAMINER		PAIR OF EXAMINERS	
			OVERALL GRADE	MARK	AGREED GRADE	AGREED MARK
Standard						
Difficult						
Very Difficult						

The pass mark is 50. Marks should be given in 5s (e.g. 80, 75, 70, 65, 60 etc) in accordance with the following guidelines. Intermediate marks, e.g. 53, 67 should not be used.

EXTENDED CRITERION REFERENCED GRADING SCHEME	EXTENDED MARKING SCHEME
P+	80 Outstandingly clear and factually correct presentation of the patient's history, demonstration of physical signs and organisation of the case management. Clearly a candidate displaying outstanding communication skills and clinical acumen. First class honours. 75 Excellent overall case presentation, communication skills, examination technique and demonstration of the correct facts and physical signs of the case. The candidate may even display outstanding attributes in some but not all measurable criteria. First class honours. 70 Excellent in most respects of overall case presentation, communication skills, examination technique and demonstration of the correct facts and

3. Mini –Clinical Evaluation Exercise (m CEX) [11]

In this method, a faculty member watches a trainee – patient encounter in any health care setting.

The duration of each encounter shall be 15 minutes.

The trainee is expected to conduct a focused history and or physical examination during a allotted time.

Trainee provides assessor a diagnosis and treatment plan.

The performance is scored using a structured form, and the educational feed-back is provided.

Such 6 encounters are undertaken during a year.

For each encounter a different assessor is nominated. Each encounter will have different clinical problem

It has higher fidelity, permit evaluation based on a much broader set of clinical setting and patient problems, is less expensive and is administered on site.

Each domain is scored from 1-9, where:
1 – 3 = Unsatisfactory
4 – 6 = Satisfactory
7 – 9 = Above average

There is also the option of scoring "not observed" when a particular skill has not been assessed or observed.

4. DOPS – Direct Observation of Procedural Skills

In this method, the assessor observes the trainee while he or she is performing a procedure.

The assessor rates the performance and then provides feed-back

Trainee has to undertake such 6 encounters in a year. For each encounter a different assessor is nominated. For each encounter a different procedure is performed.

Direct Observation of Procedural Skills format

Please complete the question using a cross (x). Please use black ink and CAPITAL LETTERS

Trainee's		
Trainee's		
GMC number		GMC NUMBER MUST BE COMPLETED

Observation	
Code number	

Observed by		
GMC number		GMC NUMBER MUST BE COMPLETED
Date		
Signature of supervising		

Assessment:

	Practice was satisfactory	
	Practice was unsatisfactory	
If the performance was judged to be unsatisfactory, you must tick the boxes on the reverse of this form to indicate which areas of performance you judged to be unsatisfactory. Areas of excellent practice can also be indicated on the reverse.		
Example of good practice were: **Areas of practice requiring improvement were:** **Further learning and experience should focus on:**		

5. OSATS – Objective Structured Assessment of Technical Skills.
It assess specific procedural skills like appendicectomy, cataract surgery etc.

It assess procedure skills, handling of instrumentation and documentation.

It has strong validity but less reliability.

Conclusion
OSCE and OSLER are the methods of choice that are used to assess clinical skills in a stipulated time that is during so called final Exams involving large number of students in a given time.

M CEX and DOPS are the methods which assess student's clinical acumen aver a period of time.

All these tools are excellent and fulfil criteria of a near ideal tool for long case assessment.

The perfect method for long case clinical assessment has yet to be established.

Any method will always be a compromise between objectivity, validity and reliability on one hand and practicality on the other.

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15 IMPORTANCE AND SKILLS OF GIVING EFFECTIVE FEEDBACK

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Feedback is a vital part of education and training programmes. It helps learners to maximize their potential at different stages of training, raise their awareness of strengths and areas for improvement, and identify actions to be taken to improve performance.

Learning objectives:

At the end of the session the participant should be able to,

- Describe the different definitions of a feedback
- Discuss the different types and contexts in which feedback can be given .
- Discuss Importance of giving feedback in healthcare education and training.
- Understand the Principles of effective feedback
- Select an appropriate model to give effective feedback in a given situation
- To apply the learning from the this module to your own practice through carrying out activities and reflecting on these.

Different definitions of feedback:

- Feedback is: "**Specific information** about the comparison between a trainees **observed performance** and a **standard** , given with the intent to **improve the trainees performance** " (Van der Ridder et al -2008)
- Feedback is comments about a product or person's performance, Communication to another person which gives information about how he/she affects and is perceived by others.
- A way of helping another person consider changing his/her behavior. .

- It is the information describing a student or faculty's performance in a given activity that is intended to guide their future performance in that or a related activity.
- Feedback is something that is valued highly by educators and students alike.

Who gives feedback?

- Teachers
- Clinicians from a range of healthcare professions
- Patients
- Peers and colleagues
- The learner themselves
- Others

Why Feeback is given?:

Jill Gordon (writing in 2003 about the importance and influence of one-to-one teaching situations in clinical medicine) reinforces this, noting that feedback is vital and that the most effective and helpful feedback is based on observable behaviors:

Helps learner achieve their learning goals

- Enforces engagement with learner,as training without feedback, mistakes can go uncorrected and bad habits can develop
- The learner may also drop positive behaviors or make inaccurate assumptions.

Needed for the development of competency and expertise

- Clinical reasoning
- Critical thinking
- Judgment

Facilitates learning process and teaching performance Improves teaching skills

University teachers receiving feedback aimed at improving teaching showed improvement immediately post consultation and this continued to be observable 3 years later.

Linking feedback to the learning process.
It is very important to ensure that the feedback given to the learner is aligned with the overall learning outcomes of the programme, teaching session or clinical activity in which the learner is engaged. Giving feedback can be seen as part of experiential learning. Kolb (1984) proposed that learning happens in a circular fashion, that learning is experiential (learning by doing), and that ideas are formed and modified through experiences. These ideas underpin the idea of the **'reflective practitioner'** and the shift from **'novice to expert'** which occurs as part of professional development.

Hill (2007) identifies that 'feedback plays an important role in helping learners move round the cycle. For example, feedback supports the process of reflection and the consideration of new or more in-depth theory. Through a process of negotiation, feedback can also help the learner plan productively for the next learning experience.

Principles of giving effective feedback:
Whether you are giving formal or informal feedback, there are a number of basic principles to keep in mind.

1. Feedback should be PLANNED :
Effective feedback is best when it has been planned. Planning involves setting the appropriate place, timing and environment for the feedback

session. Feedback is more beneficial to the learner if it is immediate. Provision of an appropriate time frame to allow discussion of the performance issues is likewise necessary. Setting the right tone and mood for the feedback encounter can engender an atmosphere of trust and respect.

Ex: Never correct a learner in front of a patient.

2. Feedback should be EXPLICIT:
Clinical teachers often give but students often feel, They don't get information about their performance, because students are not always aware they are being given feedback when it happens because it has not been made explicit to them. One of the most powerful strategies that can be used to overcome this problem is simply telling the learner that you are about to give them feedback prior to each feedback situation. Let them know that "This is Feedback!"

3. Feedback should be DESCRIPTIVE RATHER THAN EVALUATIVE:

Accurate descriptions on performance achievements and areas requiring improvement is the most effective way of giving information to a learner.

4. Feedback should focus on BEHAVIOUR RATHER THAN PERSONALITY:
Focusing on the actual behaviour of the learner minimizes a defensive response and allows

5. Feedback should be SPECIFIC, first hand objective information:
Clearly defined information about the actions that have been observed or behaviours that have been noted is the best approach and is more likely to result in improved outcomes. In this way, feedback is best when it is based on firsthand data. Learners want the specific rather than a global "overall you are doing fine"

"... feedback is formative, not evaluative – it presents information, not judgement ..." (Ende, 1983) med.monas.

6. Feed Back should be CONSTRUCTIVE:

Create awareness of strengths, as well as areas that need improvement. Follow the principle of positive critique. Appreciate what went well and tell them what needs to be improved.

7. Feedback should be NON- JUDGEMENTAL

8. Allow the LEARNER'S INPUT:

Learners should be given chance to comment on the fairness of the feedback and to provide explanations.

Types &contexts of giving feedback: Verbal:

Non-verbal: We continuously send and receive non verbal messages via tone of voice, raised eyebrow, smile, frown, hand gesture or body movement simultaneously

Formative Feedback:

Interactive activity between teacher and learner.

Purpose is to improve or modify the learner's knowledge, skills or attitudes. Useful in promoting learning

Should be provided on a frequent basis to a learner for most effect.

Summative Feedback :

Judgment is made about the learner's performance for the purpose of assigning grades, assessing competence, or comparing performance to standards. Thought of as a type of final assessment.

Not as likely to change learner's behavior

Major Feedback Scheduled feedback lasting 15-30 minutes often to address major issues or midpoint review.

Brief Feedback

Given often and is short, focused on a skill.

Formal Feedback

Provided when one sets aside time for feedback for 5-20 minutes- may be feedback about a case presentation.

Models of giving feedback:

The sandwich technique:

Feedback Sandwich:
- What did you do well? (Positive feedback)
- What could you have done better? (Positive criticism)
- How could you have done better? (Constructive advice)
- Do I make myself clear? (Check for understanding & end on note of encouragement)

Pendleton's rules :
- Allows the learner to make observations about his or her own performance.
- Briefly clarify matters of fact
- Learner states what was good about his/her performance
- Teacher states areas of agreement and elaborates on good performance
- Learner then states what was poor or could have been improved
- Teacher then states what he or she thinks could have been improved

Reflective feedback Conversation:
- A modified interactive feedback approach which builds on the Pendleton model
- Emphasizes learner, as ability to recognize his or her own performance deficits
- Includes a discussion about how the learner plans to improve
- Encourages development of reflective practice
- Teacher asks learner to share any concerns about a recently completed performance
- Learner describes what they would have liked to have done better
- Teacher provides views on performance and offers support
- Teacher asks learner to reflect on what might improve situation
- Student responds
- Teacher elaborates on response, correcting if necessary
- Feedback ends with a clear and agreed plan for change.

Six step feedback model :

Based on elements necessary to improve clinical performance An observed event (learner behavior)

An appraisal of that event(teacher, as assessment) A recommendation for improvement

Other feedback models:

- The SCOPME model
- The Chicago model
- The ALOBA model
- SET- GO method of descriptive feedback
- IMPROVE Model
- One-minute clinical preceptor 4

General steps in providing Effective Feedback :

1. Prior information to the student
2. Appropriate place / Situation
3. Begin with self assessment by the student
4. Highlight areas where the .student is doing well.
5. Outline areas which need improvement using descriptive and not evaluative language.
6. Handle reaction maintaining the dignity.
7. Suggest an action plan.

Barriers to giving effective feedback:

Hesketh and Laidlaw (2002) identify a number of barriers to giving effective feedback in the context of medical education:

a fear of upsetting the trainee or damaging the trainee–doctor relationship a fear of doing more harm than good the trainee being resistant or defensive when receiving criticism. Poor handling of a reaction to negative feedback can result in feedback being disregarded thereafter feedback being too generalised and not related to specific facts or observations feedback not giving guidance on how to rectify behavior inconsistent feedback from multiple sources a lack of respect for the source of feedback.

Do's and Don'ts of giving feed back:

Do's:

- Find an appropriate time and place
- Agree what you are going to focus on
- Start with what went well – accentuate the positive
- Distinguish between the intention and the effect
- Distinguish between the performance and the personal (e.g. 'what you said sounded judgmental' rather than 'you are judgmental'
- Identify areas for improvement
- Offer alternatives Check for understanding

Don'ts:

- Generalize
- Comment on things that can't be changed
- Criticize without making recommendations
- Be dishonestly kind – if there is room for improvement be specific
- Forget that your feedback says as much about you as about the person to whom it is directed

Conclusion:

Being able to give effective feedback on performance in both formal and informal settings is one of the key skills of a clinical teacher. Giving feedback can range from simple, informal questions and responses while working alongside a learner on a day-to-day basis through to giving written or verbal feedback through appraisal or examinations

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"If feedback is to be effective it needs to be frequent, constructive and instructive". (Dinham,2008)

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