



Principles of Medical Education (Writing Instructional Objectives)

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If you are not certain of where you are going, you may very well end up somewhere else and not even know it.

This statement by Robert Mager aptly summarises the importance of stating objectives so that the students as well as teachers know precisely as to *where they have to go*. In the previous levels at which objectives can be stated. The present discussion will specifically focus on instructional objectives or *learning objectives*.

We hope that by now you are clear about the difference between aim and objectives. Let us repeat it for you.

Aim is broad statement of an educational activity while objective is a precise point in that direction. To take a simple example, you may aim towards south with the objective of reaching Bangalore. Coming back to education, we can say that the aim of medical education is to produce a good doctor. This however, does not tell us about what goes into the making of a good doctor. This interpretation is often left to individual teachers. The teacher has then to decide how much of a topic to include in his teaching and to what level to take it. Let us try to state this in another way. An aim can be

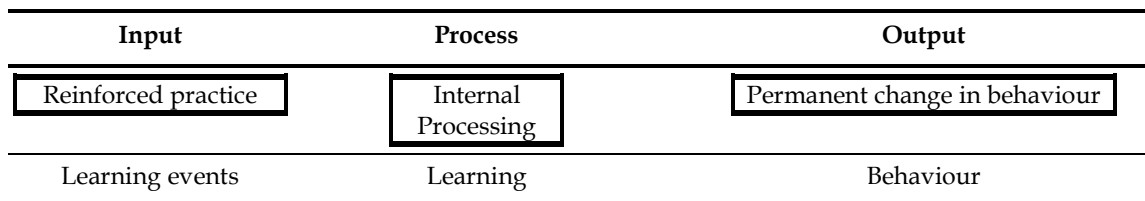
defined as an answer to the question of why a topic is taught and an objective as an answer to the question of what will have been achieved when it has been taught.

Recall for a minute, the Education Spiral. You would notice that the process of education begins with statement of objectives, which leads to choosing appropriate teaching-learning strategies and thereafter deciding means to evaluate attainment of these objectives. What does it mean? It means that teaching methodology as well as evaluation is heavily dependent on objectives and if they have not been precisely stated, then the other two processes is unlikely to be appropriate.

SYSTEMS APPROACH

Let us take you for a while to systems approach in Education you have already come across this term in the context of curriculum. In a nutshell, systems approach states that education means certain inputs (books, lectures, experience) which are processed to produce a permanent change in behavior (learning).

Diagrammatically, it can be represented as follows:



You have rightly noticed that as a teacher, the phenomena you can control are learning events and observation/measurement of performance. In other words, you as a teacher must be able to use a more precise language which describes in behavioral terms, what the student will be able to do at the end of a lesson. When you have stated the change in behavior that you hope to produce in the student, you have written an objective.

The learning objectives can be divided into 3 basic categories:

- (i) Objectives related to development of knowledge.
- (ii) Objectives related to inculcation of attitudes. Yes, you have guessed right - these categories relate to cognitive, psychomotor and affective domains. The categories vary considerably not only between subjects but also between teachers

teaching the same subject and between students learning the same subject from the same teacher.

Does it mean that weight age to different categories of objectives depends on the whims and fancies of individual teachers? The answer is a categorical 'No'. For any course and any subject, the relative weight age should be predecided, based on what the final product of the system will be required to do. Let us clarify it with an example. If an MBBS doctor is not required to perform an exchange transfusion, then objectives related to this aspect should get less emphasis while more emphasis should be laid on diagnostic and referral aspects of neonatal hyperbilirubinemia. To make it less subjective and clear to all teachers, you can prepare what is called a table of specifications. You can understand it better by looking at the following example:

Topics	Weightage	Cognitive	Psychomor	Affective
Cardiovascular	25	50	40	10
Respiratory	35	50	40	10
Neurology	10	30	50	20
Abdomen	30	40	40	20

METHODOLOGY

You will be eager by now to know the ways in which objectives can be written. Two approaches are commonly used for this purpose - that suggested by Mager and the other suggested by Gronlund. Mager's approach is simple, straight forward and universally accepted - although it is criticised for being too simplistic! In our opinion, for the undergraduate level, it still remains the best approach. For higher levels of learning e.g. for post - graduate courses, Gronlund's approach could be used. In the subsequent discussion, we shall restrict ourselves to Mager's approach.

COMPONENTS

Mager has suggested that a learning objective should have 3 specific elements viz.

- Specific performance of the student.

- Conditions under which this performance is expected.

- The minimum acceptable level of performance.

Let us now try writing instructional objectives based on these criteria.

Examples: The student will be able to:

- Palpate the liver size of a child to the accuracy of ± 0.5 cms.
- Recognise at least 3 major symptoms of pre-eclampsia during an antenatal check up.
- Record weight of a newborn using a lever scale to the accuracy of ± 50 gms.

Can you recognise the 3 criteria in each of these objectives?

They are:

Performance	Condition	Minimum level
1. Palpate the liver	Child	accurate to ± 0.5 cm
2. Recognise Pre - eclampsia	Antenatal visit	3 major symptoms
3. Record weight of new born	using lever type scale	accurate to ± 50 gms

In general, all learning objectives will have these three criteria.

Now look at the following objectives and try to find them out.

- Identify ova in a stool smear.
- Recall common causes of diarrhoea in a child.

You have rightly noted that there is no minimum level of performance in these objectives. However, it is taken for granted that it is 'correctly' (Recall correctly the common causes of diarrhoea). This type of writing will however be applicable only if there is only one acceptable response possible for the students.

Did you notice another point - that all objectives begin with a verb ? This is because the basic purpose of writing objectives is to be able to observe the performance as a proof of learning. This observation is possible only when the student does something.

We have reproduced a list of action verbs which you can refer to, whenever you are writing objectives. It is generally better to use verbs with narrow interpretations (draws, recalls, does, labels) rather than those which can have variable meaning (understands, learns, comprehends).

All learning objectives do not qualify to be called good. The qualities of a good objective can be enumerated as follows:

- It is relevant to the health needs of the society. For example, it prompts the student to learn more about tuberculosis than about degenerative disorders.
- It is not loaded with what is called ' window dressing' rather, it is straight forward with no

scope for ambiguity and subjective interpretation.

- It is feasible within the given constraints and restraints of time, faculty and university requirements.
- It is observable - in fact, the whole emphasis in objective writing is on observability.

It is measurable objectively. This provides you and the student with a means on which to base feedback.

QUALITIES

Technique of writing good objectives: By now, you are well versed with the basic components of a learning objective. Can you enumerate them? They are the performance, the condition and the minimum level of acceptance. Out of the various qualities of a good objective listed above, in our opinion, the most important is relevance. Thus, not only should an objective be technically sound, it should also be relevant to what a student is actually going to do after completion of his course. It is clear that good objectives are derived from actual base and not from imagination. You would be wondering, that forms this base, Let us tell you about some techniques which will help you in writing relevant objectives.

BASIS OF WRITING OBJECTIVES

- **Critical incident method:** Subject experts are requested to observe a student and describe a specific incident in which the student performed a task very well and reasons for arriving at that conclusion. Accumulation of such incidents from a large number of

independent observers leads to a full range of expected professional competencies. There is however, risk of subjective bias creeping in.

• **Job analysis:** In this method, a dissection of what a physician does, is carried out by observers, patients and physicians themselves and thus, a list of professional competencies is arrived at. However, this gives an indication of what is presently being done rather than what should actually be done. You must have noticed that both the methods described above involve a subjective element and any wrong practice being carried out may also become legitimised. Well, to overcome this problem, you can use the following methods.

• **Referral patterns:** These provide a useful insight into what is not being done. For

example, if children with diarrhoea are not being given ORS, it is an indirect indicator of the need to give more emphasis to objectives in this area.

• **Morbidity and mortality statistics of a country or region:** These provide a useful guideline regarding 'relevance' of a disease. Thus, we are obviously more concerned with diarrhoea, pneumonia and malnutrition rather than with rare syndromes.

Sounds complicated? Well, maybe it is. But this type of exercise is necessary to maintain relevance of medical education to the needs of the country. This assumes more importance in view of the fact that medical education in India is highly subsidised; the end products of the system must be able to address the common health problems of our people.

Table of Action Words to be used in framing objectives

Knowledge / Comprehension		Application		Problem Solving	
Arrange	Order	Apply	Illustrate	Analyse	Illustrate
Cite	Outline	Assemble	Infer	Appraise	Infer
Classify	Recall	Calculate	Interpret	Argue	Inspect
C Convert	Recite	Change	Modify	Arrange	Interpret
O Copy	Record	Choose	Operate	Assemble	Judge
G Define	Relate	Compute	Practise	Assess	Justify
N Describe	Reproduce	Defend	Predict	Categorize	Manage
I Discuss	Repeat	Demonstrate	Prepare	Choose	Modify
T Distinguish	Report	Discover	Produce	Combine	Organize
I Explain	Restate	Draft	Relate	Compare	Plan
V Express	Review	Dramatize	Schedule	Compose	Predict
E Give example	Rewrite	Draw	Select	Conclude	Prepare
Identify	Specify	Employ	Show	Construct	Propose
Indicate	Summarize	Estimate	Sketch	Contrast	Question
Label	Tell	Explain	Use	Convert	Rate
List	Translate			Create	Relate
Locate	Underline			Debate	Score
Match				Define	Select
Name				Devise	Solve
				Differentiate	Support
				Discriminate	Test
				Distinguish	Value
				Estimate	Write
				Evaluate	
				Examine	
				Experiment	
				Formulate	

Table of Action Words to be used in framing objectives

	Accept	Locate	Affirm	Perform	Act	Integrate
A	Accumulate	Name	Approve	Practice	Adapt	Mediate
F	Ask	Point to	Assist	Propose	Change	Organize
F	Describe	Respond to	Choose	Select	Defend	Revise
E	Follow	Select	Complete	Share	Display	Solve
C	Give	Sensitive to	Conform	Study	Influence	Verify
T	Identify	Use	Describe	Subscribe to		
I			Discuss	Work		
V			Follow			
E			Initiate			
			Invite			
			Join			
			Justify			

Table of Action Words to be used in framing objectives

	Knowledge / Comprehension		Application		Problem Solving	
P	Complete	Press	Activate	Loosen	Adapt	Fix
S	Demonstrate	Pull	Adjust	Manipulate	Combine	Generate
Y	Distinguish	Push	Assemble	Measure	Compose	Illustrate
C	Hear	See	Build	Open	Construct	modify
H	Identify	Select	Construct	Operate	Convert	Organize
O	Locate	Set up	Copy	Perform	Create	Plan
M	Manipulate	Show	Demonstrate	Remove	Design	Repair
O	Move	Sort	Disassemble	Replace	Devise	Service
T	Pick up	Specify	Disconnect	Rotate		
O	Point to	Touch	Draw	Select		
R	Practice	Transport	Duplicate	Set		
			Execute	Slide		
			Load			
			Locate			