

# Examination and Assessment Principles

## *Integrating Assessment with Teaching-Learning Processes*

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### Abstract

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*An analysis is made about the well-known drawbacks and inadequacies of the present examination system in India in terms of the poor quality of questions, lack of transparency and its inability to cater to the needs of the modern society that requires skilled manpower. There are also administrative difficulties although some of them like cheating in examinations and late declaration of results have to a considerable extent being successfully addressed. We underline the limitation of the present examination system which is mainly used for certifying purposes and which is integrated only to a limited extent with the larger teaching-learning system. We point out that a proper assessment system similar to the one that prevails in U.K. and elsewhere, not only fulfils this basic need but also helps the teaching-learning aspects both of students and faculty. This is done by a proper understanding of the objectives and principles of assessment, by aligning the assessment with the curriculum and by giving periodic feedback to students. A brief discussion about the various types of assessments and their objectives, and how they are able to improve the educational system and generate requisite skills is made. The need for proper infrastructure and qualified teachers who enjoy trust and support systems is also stressed.*

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### Introduction

Some faculty members and Directors of IIT are informally admitting that IIT is unable to get the best students through its competitive examinations. This may appear puzzling, considering that out of more than 3 lakh students who take the

test only about 4,500 students are finally selected and those who are successful are highly motivated and serious.

And yet this is one more admission of the fact that there is something drastically wrong with the examination system in India. It is not being able to produce persons with relevant skills and

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knowledge required in today's world. There are several common problems in the examination system both at the school and college levels:

- Poor quality question papers with vague and often repetitive questions
- Subjectivity and lack of consistency in marking of scripts by examiners
- Problems in administration of examinations and in declaration of results
- Cheating in examinations
- Lack of transparency in the system
- Large scale stress among students both before the start of the examination and after the examination results is declared.

But in addition there are serious substantive issues involved as to the different purposes of assessment of the students and how these are to be addressed. While the education sector both at the school level and Higher Education (HE) levels has undergone drastic, almost unimaginable changes both in terms of content, approach and pedagogy, the examination system is an obsolete system that we are unable or do not wish to substantially change.

Most of our universities had adopted the British system of education including the examination system that basically consisted of year end final examination in different papers of any particular course – U.G. or P.G. For science or statistics subjects there were in addition, the practical examination, usually held before the theory papers, which carried about 20 to 30 % weightage. For medical or engineering courses there were certain additional tests like clinical examination or workshop practices etc.

The format of the education system has not undergone many changes except that the annual academic programme at the tertiary level has been modified to a semester programme in several courses. On the examination front also certain modifications have been introduced in the system – a mid-term exam or test has been introduced carrying about 5 to 10% weightage and a few written assignments or projects have also been introduced in certain subjects like commerce or management studies etc.

The entire issue of curriculum and examination reforms at the school level has been considered by NCERT in 2004-05 in the National Curriculum Framework. The *Position Paper of the National Focus Group on Examination Reforms* (2005) has cited several problems being faced by Examination Boards, and has come out with certain suggestions for improvement or good practices. The paper lists various deficiencies in the present examination system – lack of quality of question papers, stress on rote memorisation, lack of transparency in grading and marking, lack of flexibility in the system to cater to the needs of 'slow learners' or students belonging to schools with inadequate infrastructure, etc.

The paper also underlines the inability of the system to serve 'the needs of a social justice' and to cater to the demands of the modern society. It writes: "Indian school board exams are largely inappropriate for the 'knowledge society' of the 21st century and its need for innovative problem solvers"

On the administrative front several improvements have been carried out in our examination system. Cheating in

examinations has been reduced by the introduction of *flying squads* and other measures; declaration of results and issuance of mark sheets have generally been expedited and in many cases like the CBSE, the results can be obtained on line. The quality of papers and their evaluation has also improved although there is scope for taking further steps.

In India the pattern of examinations has remained almost unchanged for the last sixty years although in U.K. and elsewhere, assessment and evaluation procedures have undergone major changes. Not only are there changes in procedure to make assessment more systematic, transparent and fair both to the students and the teachers, a considerable amount of research has also been undertaken to evolve effective and innovative procedures. This has been done in view of the evolving societal needs, which lays emphasis on relevant skill generation and not just obtaining a degree of science or commerce for example.

As a result of this evolution in the education sector, significant changes have taken place in (what we call *examination system*) the assessment system and practices in U.K., Australia and other countries. Assessment is now used as an integral part of the total teaching-learning process (TLP). There is also a great deal of dependence on IT not only in the teaching but also in the assessment sector. Computers have become indispensable in the educational and assessment sectors both as tools and in the form of e-learning and e-assessment.

The administrative improvements in the conduct of examinations and

declaration of results in India, although welcome, have not fully addressed the substantive problems of teaching-learning that have been outlined above. The examination system has basically performed a certificative role – i.e., remained a means of giving marks or grades to students and has not been fully integrated in the teaching-learning regime. What is required is a thorough understanding of the issues of assessment and evaluation – their basic purpose in the teaching-learning processes and advantages or disadvantages of different types of assessment procedures.

Considering the principal limitations of the present examination system, we offer some suggestions for going beyond the certificative role of the examination system and to evolve a system for improving teaching-learning environment in India. The new system that we propose is **not** being called *examination system*, which has a specific connotation but rather the *assessment system*. The latter has much broader significance than the former with examinations forming one of the components of the assessment system. This is not just a semantic difference but rather a substantive one where the role of teaching-learning and assessment are organically linked. In fact the total teaching-learning assessment combine is also called TLA in modern terminology (Biggs, 2003).

In the following sections of the article, we discuss several key issues:

- Objectives and Purposes of Assessment
- Principles of Assessment
- Teaching Learning Process (TLP)

- Skills required in Contemporary Society
- Role of Teachers, etc.

### **Objectives, Purposes and Principles of Assessment**

It is instructive to outline the various objectives/purposes of assessment. There are also various broad principles of assessment that we must adhere to make the assessment fair, transparent and dependable.

#### **Objectives**

There are basically two important objectives why we need to assess students – (i) for certification, and (ii) for giving feedback to students in the process of teaching and learning.

##### **(i) Certification**

As mentioned earlier, the main objective of assessment in India has been to **certify** students' achievement at the end of a course or programme.

This means that when a student has passed his/her plus-2 examination in Science and Mathematics stream, we know what the student has studied in Physics, Chemistry, Mathematics, English and possibly Computer Science or Life Sciences or perhaps Economics. His marks or percentage scored by him gives an idea about the level of achievement in the various subjects and the complete result provides information whether the student has passed, or obtained second, first division or distinction marks.

The same is true for College or University level examinations also.

##### **(ii) Feedback for teaching-learning**

In our system feedback about students' learning is generally ignored. Feedback needs to be given to students periodically for improving both learning and teaching. If there is a deficiency in learning, suitable inputs need to be provided to students to improve learning or alternatively, if most of the students are not learning properly, teachers need to change their methodology or strategy of teaching. This is being increasingly done to improve teaching-learning environment in UK, Australia and USA.

Feedback is an important aspect of teaching-learning process. If it is specific and worded clearly, it can enhance students' motivation, encourage reflection and in general, promote learning.

Another purpose of feedback as discussed by Boud and Falchikov (2006) is to promote long-term learning after formal teaching has come to an end. We will discuss the impact of feedback in *teaching-learning* process in greater detail later.

Keeping in view these objectives we have two different types of assessment:

- *Summative*: a final mark or grade or division at the end of a unit/module/course or at any specified period of the academic year.
- *Formative*: used for facilitating learning. Both students and teachers need to know how learning is proceeding.

We should indicate that *summative assessment* itself is of two kinds

- *Normative*—Norm Referenced Assessment NRA (for ranking students)
- *Criterion Referenced Assessment*. CRA (for informing what and how well a student has learnt).

In India the NRA is used both for grading students' performance in an examination as well as to rank them. However, it is important to differentiate between the two purposes. The former purpose is meant for giving marks or grades (50 % or B grade or II division). The latter is to choose the top 10 or 15 or 20 % students irrespective of the marks obtained by them. This is needed in entrance examinations for admission to a course or even for selecting candidates for a job e.g. in the Indian Civil Services or in the Defense Services, etc.

In CRA the objective is to assess students' understanding of and performance on what they have learnt on the basis of certain pedagogic criteria or competencies. Courses or modules are written in terms of competencies, criteria and skills that are tested by this method. The emphasis is not on rote memory as used to be earlier or confined to a given textbook alone, but on a proper understanding and application of competencies and the ability to acquire the necessary skills.

### **Specific purposes of assessment**

We have already listed two important objectives of assessment. There are some other specific purposes of assessment that are dependent on the point of view that is in our mind — the students' or teachers' or policymakers' points of view. We list below these purposes:

#### **A. Students**

- Obtain a certificate of passing and marks/division obtained
- Grade or rank students
- Diagnose students strengths/weaknesses
- Assist weaker students by giving them special inputs or support
- Motivate students to learn better
- Provide feedback for students learning.

#### **B. Teachers**

- Evaluate course strengths/weaknesses
- Identify weak students who may need special support systems
- Suggest alternate methods/strategies of teaching.

#### **C. Organisers/Policy Makers**

- Provide inputs for curricular changes/development
- Provide feedback about features (strengths/weaknesses) of courses or Modules
- Gauge employment possibilities of passouts
- Provide relevant feedback and information to prospective employers, etc.

### **Principles of Assessment**

There are some broad principles of any assessment process that should be followed for fairness, transparency and consistency. Some of these are listed below:

- Assessment to be integral part of the Course/Curriculum
- Assessment should provide feedback to support learning process

- Assessment to include several different competencies or learning criteria.
- Assessment should be
  - Consistent and Reliable
  - Valid
  - Transparent
  - Bias Free
  - Practicable and do-able within available time.

By reliable and consistent we mean that if the same answer is being marked by different persons or the same person marks it at different times, the marks obtained should be either same or very close to each other. Validity means that the questions should test what is desired to be tested. For example if we want to test students' understanding and applications of quantitative techniques, then the question should do precisely that and not ask question about the definition or meaning of terms like mean or standard deviation etc.

Transparency signifies that students are aware of the nature of the assessment, how their performance is being assessed and how to improve it. They should have access to their answer books after marking a practice that is an absolute taboo in our present system.

Bias free assessment means that there should be no bias – for or against any student while assessing his performance – a written or oral test or a project report or an assignment etc.

There are various Methods of Assessment like Quiz, Weekly/monthly exams, Open book exams, Objective (Multiple Type) Tests, Take-home tests, assignments, E-Assessment, etc. These

have their advantages or disadvantages with some being more appropriate in certain situations and others in different situations. However we do not discuss them here since they are beyond the scope of this article.

### **Teaching Learning Process**

This is a very important objective of assessment, which has traditionally been largely ignored in the Indian system. A proper and regular process of assessment allows the teachers as well as the administration to know how the teaching and learning process by students is going on and if remedial steps need to be taken to improve it.

According to Biggs (p. 141):

To the teacher, assessment is at the end of the teaching-learning sequence, but to the student it is at the beginning. If the curriculum is reflected in the assessment, the teaching activities of the teacher and the learner activities of the learner are both directed towards the same goal.

Learning-oriented assessment has been considered to be very important in the British and Australian Universities today. A special issue of the *Journal of Assessment and Evaluation in Higher Education* (Vol. 31, No. 4 August 2006) has been devoted entirely to this objective so that assessment could be so tailored to maximise meaningful student learning. Boud and Falchikov (op. cit.) have considered the issue of assessment from the point of long-term learning.

According to them:

“The *raison d’être* of higher education is that it provides a foundation on which lifelong learning in work and other social settings can be built. Thus apart from short term focus of assessment, it must also foster learning after graduation...”

We have already underlined the advantages of proper feedback for promoting teaching-learning. However, Beth R. Crisp (2007) in her paper argues that teachers’ feedback alone is inadequate to promote deeper learning. At best it has limited impact. There could be several reasons but one reason is that the feedback is of general and imprecise nature which leaves students puzzled. This may be due to large number of students to deal with and with limited time available to teachers, it is often difficult for teachers to give proper feedback. Another reason could be that students themselves are often not very keen to act upon the teachers’ feedback.

### **Role of teachers in Examination system**

The low status of school teachers, their poor emoluments and the minimum qualifications prescribed for becoming a school teacher have been graphically described by Kumar (pp. 81-82). He writes that as late as 1950, only 13% of elementary teachers in India were matriculates. This percentage rose to 34 towards the end of 1950s. Even today only about 70% of the primary teachers in India have passed the Higher Secondary or Senior Secondary

examinations and about 25 % have passed only the eighth class examination or lower.

It is not surprising therefore that in most Examination Boards and Universities, a veil of secrecy covers the whole gamut of the examination system. Right from the time of paper setting to evaluation of scripts to moderation and finally to declaration of results, the system works on the principle of secrecy and opaqueness and the belief that teachers who do all the components of the examination system, cannot be trusted. They are supposed to work in utmost secrecy and confidentiality without their names being identified or publicised. This practice has been continuing right from the British times.

Not only in the School examination Boards, but also at the University level, examinations are externally organised which means that paper setting, moderation and evaluation of answer scripts is done by outside teachers. The teacher usually is **not** allowed to evaluate the scripts of his own students.

A recent study of the U.P. Board examination results for Classes X and XII indicates that of about 34 lakh students who appeared in these examinations, an abnormally large number of about 15 lakh students failed. This is a shocking state of affairs which should cause soul searching and a deep analysis of the factors responsible. There are many causes responsible for this tragic situation but one of the principal ones is the fact that since there is one paper for all the students, economically or academically weaker students are put to a great disadvantage. Similarly rural

students also face difficulties since the orientation of the question paper usually has an urban bias. Another factor is the absence of qualified and trained teachers and lack of proper infrastructure.

This situation needs to be altered. In addition to removing or at least reducing the above bias, a system where teachers are given proper recognition, support systems and necessary responsibility should be adopted for a better teaching-learning environment.

Krishna Kumar has written extensively on the practice that prevailed from the time there were public examinations at the school levels. He writes (p 68):

“The teacher however could not be trusted and hence was not permitted to examine his own students. All he could do was to prepare them (students) to the hilt which meant giving them the opportunity to rehearse endlessly the skills of reproducing the text from memory ... on any question based on the textbook...”

Here the question of using the examination system as a feedback to improve teaching and learning processes did not arise. To a large extent the practice still prevails today.

### **Knowledge Society and Skills**

In the time of British rule, knowledge remained scarce since it was confined to a select few. Here the primary goal of education was to produce clerks and a few other professional people like doctors or engineers for the country and the

process consisted of disseminating it through prescribed textbooks. The prime purpose of examinations appeared to consist of testing the success of such transmission. The process of nation building and the creation of an industrialised society however required diverse skills and competencies.

A modern society requires various types of professionals with diversified skills – not just doctors, scientists, engineers, chartered accountants or economists, but also nurses, paramedics, travel agents, advocates, TV and newspaper reporters and anchors, salespersons, computer personnel etc. The type of skills required are usually not addressed in the examination system that prevails in India today.

This results in what has been termed as unemployable graduates or post graduates. The NCF has quoted a head hunter who has said that “nineteen out of twenty graduate applicants and 6 out of 7 post graduate applicants are unemployable. They lack the requisite problem solving skills or often do not know what problem solving means”.

Ganesh Natarajan writing on *Transforming the skills environment in India* has also underlined this problem. He writes:

“There is a constant refrain in the Indian IT and BPO sectors that less than 20 per cent of the 300,000 and more engineers who graduate each year are employable in the software industry without huge investment in learning and training inputs”.

He further writes that ‘many other sectors like retail, hospitality and



healthcare have joined the clamour for a better skilled workforce. Our educational apparatus has failed to deliver what the industry needs and no number of finishing schools which are now mushrooming all over the country will compensate for a structural malaise in the learning content and processes'.

The monthly journal *Seminar* in its July 2008 issue writes (p. 12):

"It is difficult to deny that no Indian university or institute, the IIMs and IITs included, ever makes it to the top ranks in any list .... Little surprise that exceptions apart, all employers – public or private – continue to carp about the unsatisfactory skill and knowledge base of our graduates, and at all levels."

### **Types of Skills**

There are various types of skills that need to be taught and acquired by students. These will naturally depend on the stage of education as well as the subject/stream that a student is following. But some broad skills that are necessary at different levels, are outlined below:

- **Development of Knowledge and Understanding.**  
These are subject specific. For example in the subject of Political science at the UG level the knowledge of the Indian constitution and its framers, its development in the last sixty years, its main features will be required to be understood and learnt by students.
- **Cognitive and Intellectual skills**  
These are generic skills that include the concepts of analysis,

synthesis, collation, extension, generalisation, evaluation, application, etc. The levels of analysis or synthesis will depend on the stage or level that a student is studying. For example, analysis at the lowest level would mean the ability or skill to analyse with guidance of teachers using given classification principles or criteria. For the higher levels it may mean analysis without or with minimum guidance.

- **Transferable skills**  
These include communication, management of information, problem solving, quantitative skills or abilities, graphical or drawing skills. There are also skills involved in working in groups or as a team.
- **Practical skills**  
These include the skills to work on computers, handle scientific equipment or machinery, working in a lab or studio etc. Again these skills will be developed from a very rudimentary level to advanced level as the student progresses from a lower level to higher levels of study.

A good education and assessment system should be able to test different types of skills in addition to the subject specific understanding and concepts. Today, the focus of the education system is to transmit knowledge and concepts to students, without ascertaining to what extent various skills are being acquired by learners. Even in the science courses, there is only a limited emphasis on making students adept at practical skills. Whatever skills a student is able to imbibe is incidental and fortuitous and

in spite of the prevailing system. This is particularly true of non-elite institutions of higher learning which lack adequate resources and qualified faculty.

The system that has been suggested above integrates the teaching-learning and assessment practices organically. With proper infrastructure and qualified faculty enjoying good support systems and trust, there will be a noticeable improvement in skill generation.

### **Conclusions**

We have tried to analyse the present examination system at the school and University levels and underlined the various deficiencies and limitations it suffers from. We have attempted to go beyond the traditional examination system to an assessment system which is aimed at integrating the teaching-learning process with the assessing of students' performance. This system is prevalent and successful in U.K., Australia and other countries. Broad principles and purposes of assessment have been outlined above. In this system, the importance of proper feedback by teachers to encourage and motivate students is stressed.

The article also lists various types of skills required in a modern society which unfortunately are not being acquired by students in the traditional education and examination system thereby making a large number of graduates

unemployable. If assessment is properly aligned to the curriculum and appropriate teaching-learning strategies are observed, students are likely to acquire these skills and acquire better skills and become employable.

The article points out at the low status of teachers in India especially at the school level. Moreover, a cloak of secrecy surrounds the examination system that works on the principle that teachers cannot be trusted despite the fact that they are involved in all stages of the examination system. Teachers must be given proper recognition and responsibilities.

It is critical that proper working conditions, trust, recognition and support system are available to the teachers. Otherwise, they will obviously not be able to play the increasingly responsible part in the teaching-learning process that has been suggested above. They also need to be periodically given orientation and training in pedagogy and use of newer technologies and practices. We understand the constraints on teachers even at the higher education level — not to speak of the school level. However, if a beginning is made at least in some well endowed and forward looking institutions like the IITs and the IIMs, the results are bound to be encouraging for all the stakeholders — students, teachers and education providers.

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