HIGHER EDUCATION VALUATION:
TRANSPARENCY, ACCOUNTABILITY AND COMPARABILITY

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The paper presents a critique of evaluation in Higher Education in the light of transparency, accountability and comparability at Higher Education Stage. It is observed that prevalent fallacies in the evaluation process restrict the comparability of scores achieved by the degree-holders; in this, lack of correspondence in the instructional objectives, curricular modes of transaction, evaluation criteria and needs at the societal level come into picture. It is asserted that use of randomizers for appointment of examiners at the State/National Level is the need of the hour. Suggestion is made that innovations in examination process be carried out by C.B.C.S. and Universities and institutions of eminence be tried out at the higher education level; this may help break the tedium attending education processes at the higher education level.

KEYWORDS: social scrutiny; compatibility and correspondence; transparency; innovation; equity.

RECOGNITION AND ACCREDITATION

A large number of professional institutions have been opened in India during the previous decade; these are duly recognized by the apex Councils, namely, AICTE and NCTE. The argument forwarded in this regard is that an institution applying for recognition does so in public interest. It is thought that if the institution satisfies the laid down criteria, then it has to be granted recognition. As a result, the face validity of the over-crowded and largely substandard institutions reveal that we do not have data with respect to the trained manpower requirement, neither for present nor for future. The NAAC has laid down a condition that if on accreditation a Teacher Education Institution does not obtain a minimum of specified Grade on the nine point scale, then neither can it offer additional courses nor can it add new student units to the program. It is an appreciable regulatory control. But social scrutiny of these institutions reveals that a large number of the newly-opened engineering colleges have already died, so to say. Add to this that a large number of the newly-opened teacher education institutions have met the same fate. Who is
accountable? Who will bridge the gaps amongst AICTE, NCTE, Bar Council, NAAC and the society? The question is worth considering.

**Lack of Correspondence amongst Instructional Objectives, Curricula, Modes of Transaction and Evaluation Criteria**

A seasoned Administrative officer and educationist has repeatedly said that we are excellent at enunciating instructional objectives, but curricula do not correspond to the stated objectives, and that further dilution takes place at the level of transaction of curricula. The comment is extended to state that we do not know what it is that the degrees represent. It has been observed from pre-primary education to higher education that there are wide gaps and differences amongst educational instructional objectives, curricula, modes of transaction and evaluation. Level-wise instructional objectives need to be delineated bearing in mind nature of the content, characteristics of learners, and needs of society. There is a need to revise age-old curricula. Modern methods, media and techniques need to be integrated for employing compatible modes of transaction and there should be correspondence amongst objectives, curricula, modes of transaction and criteria for evaluation.

**Emphasis on external evaluation than on continuous comprehensive internal evaluation**

In a large number of Higher Education Institutions in India, there is external evaluation system. The external evaluation system is very often opaque and non-comprehensive. As against external evaluation system there is a need of continuous comprehensive internal evaluation system. In the M.S University of Baroda three of the 13 Faculties have total internal evaluation semester system. Usually there are two periodical tests and one comprehensive test per course. The evaluated answer sheets are accessible to the candidates who are free to discuss the evaluation with the examiners. If need be, at times the grades are revised in the light of discussions. An M.Ed. dissertation is examined by three internal examiners and the evaluation is on the basis of averaging the grades. The dissertation is evaluated by an external referee also. If there is a difference of more than two grade points in the external and internal evaluation, then this difference is settled by calling both the internal and the external examiners round the table. This brings in ample transparency in the evaluation system. Internal evaluation free from all halo effects and biases has its own strengths. Internal evaluation is more powerful, more transparent and more significant. But it demands bias-free examiners. Otherwise, it can create chaos. A shift is required from external to internal evaluation. But for that the credibility of the internal evaluation system needs to be
established. There could be total internal evaluation in unitary universities and autonomous institutions. There could be added focus on continuous comprehensive evaluation and Grading System. Could the grading be reduced to only two levels, that is, Pass and Fail?

a. Composite Type Testing

In spite of repeated focus on composite type testing, either there are exclusively objective-type tests or exclusively essay-type tests. Now-a-days we find that the objective type tests are being used in different areas for the purpose of diagnosis, evaluating, instructional effects and placement. But these tests test only the atomistic scattered learning. They fail to test the interconnected, conceptual, schematic learning. Limited alternatives limit the strength of objective type test items. There is a need to introduce compound objective type test items. Though essay type tests are aimed to examine schematic learning, yet they do so in limited domains only. In life-like situations we need to test the molecular learning in various domains of the discipline as well as schematic cognitive perceptual learning. So, very often our tests should be composite type, that is, a mix of all types. Also, the objective type tests need to be utilized along with short answer and long answer tests to evaluate conceptual, cognitive, perceptual and theoretical learning.

b. Testing Creativity, Critical Thinking and Problem-Solving Abilities

Very often the modes of responses, — objective type, short answer type and essay type responses — are restricted to paper and pen, limited to knowledge or at the most understanding. Higher cognitive abilities are rarely tested. There should be adequate scope for expression of creativity, critical thinking, and problem-solving ability. The responses may be situation based, activity based, performance based or related to reality at the grassroots.

Open Testing at the Application and Synthesis Levels

At times there are problems of unfair means, copying, and leakage of the test papers. This is because there is too much focus on knowledge recall than understanding and application. The testing should be done at levels of higher cognitive domains. Open-book examinations and on-demand examinations could be used more frequently.

c. Automated Testing and Evaluation

Higher Education largely takes recourse to paper and pen test. The results and feedback are very often delayed. There is need, however, of automating
evaluation in Higher Education right from admission to formative and summative evaluation. There should be provision for on machine, online and on demand examination and evaluation in Higher Education. It will facilitate timely evaluation and feedback. Computer-based question banks and question papers should be produced. There should be online facility on the Internet to take tests. The Higher Education teachers should be oriented to develop their own software for testing. Authoring packages should be made available to them for evaluation in various areas. Every Higher Education Institution should have an evaluation unit for automated evaluation. It may be functional for guidance and counseling, educational evaluation and certification. Universities should have provisions for online viva voce to facilitate viva-voce of the scholars who register from far off places to economize temporally and financially. All attempts should be made for automation of testing and scoring. Periodical tests in different subjects could be automated. The characteristics of the computer-based question banks should be well established prior to their institutionalization. The change from paper-pen test to computer-based test should be welcome. There are many benefits of this that include the opportunity to take the examination more frequently, flexibility in scheduling the examination, getting results more quickly, being better prepared for work-placement and access to computer software for writing essays and doing calculations. But changing over from the manual system to the computer-based system may give rise to many issues. Teachers and students may be apprehensive about the change because they may not know what level of computer skills will be required. The concerned system needs to be oriented in advance with respect to the computer-based examination system.

- To begin with, in objective type testing, changing the order of items in a test and number of sets may be prepared for test administration. But the responses may be registered on an ICR readable sheet, to save feeding time in the machine and facilitate evaluation.

- For online testing huge question banks may be prepared with characteristics of the items well-established. Randomizers may be run to constitute parallel tests, which can be administered, controlled and scored online. Item response theory can also be applied depending upon the pattern of responses by the candidates.

- Full automation of the examination in courses/programmes may also be tried in some selected institutions, to begin with.

**Certification of all the Domains: Cognitive, Affective, Psychomotor and Spiritual**

Very often, certificates and mark sheets are representative of the cognitive domain or at the most psychomotor. Rarely is there an expression of the
affective domain. The mark sheets should also present the status on the affective domain on factors, such as empathy, impulse control, communication and co-operation, optimism, emotional self-awareness, self-assertion, effective relationships, adjustment, resilience, constructive discontent etc. Emotions represent self-sensitivity and sensitivity towards the environment. It is empathizing through interpersonal relationships through social skills, such as mutual trust, cooperation, loyalty, appreciation, attachment, responsibility, sharing, sensibility, sensitivity, openness, love, affection, friendliness, fellow-feeling and patriotism. Emotional Quotient may be expressed as

\[ EQ = \frac{Actual \ Adjustment}{Expected \ Adjustment} \times 100 \]

Similarly, Spirit is the ultimate controlling power in us which controls all our thinking and actions. Could there be added focus on dimensions, such as God and Religion, Self-awareness, Value-based Practices, Equality (Gender, Caste etc.), Fate-ism, social relationships, divinity and love, leadership, helping and integrity. Spiritual Quotient may be expressed as

\[ SQ = \frac{Manifested \ Conscience}{Expected \ Conscience} \times 100 \]

**M**oderation **at all levels: Pre-testing, During Testing and Post-testing**

Test moderation, if required, needs to be done at all the levels. Very often the post-test moderation is more difficult than during test moderation and pre-test moderation. During moderation, enough care should be taken that the test credibility and examination ethos are sustained. Particularly, during post-test moderation all possible alternatives of moderation should be thoroughly examined prior to initiation of any action.

d. **Involvement of the Stake Holders**

Sometimes, the stakeholders are not fully involved in the process of examination and evaluation. At times the results are placed before the controller of examination for signatures. Before signing the controller should satisfy himself that the results are well prepared. There is no place for sampling while examining the results. Similarly, if the parallel tests are formulated, the parallel between the tests should be properly ascertained by the authorities. If the perceptual variance in the evaluation is questionable the stake holders cannot afford to close their eyes.
e. Accountability of Everyone Involved in Examination

All the entities involved in the examination should feel and act fully accountable. Deputy Registrar Examination, dispatch clerk, support staff, examiner, translator, moderator, press, supervisors, and examinees all should feel equally accountable. The slip or deliberate deviation at any level can create chaos.

Development of State-wise/Central Databases and Use of Randomizers for Appointment of Examiners

One of the reasons in fall of the standards of examination is the frequent bias in the appointment of examiners. State-wise/Central databases may be created and the examiners could be appointed by running randomizers.

f. Added Rigour in Research Examination

The standards of research examination have gone down both at micro and mega levels. Very often the constitution of Research and Degree Committees is not up to the mark. The rules for appointing the external referees vary from university to university. Some universities insist that at least one of the external referees should be from other countries, whereas others insist that all the external referees should be from the same State. Some of the universities think that the experts who conduct the viva-voce on research degree should be other than those who examine the thesis. There is a need to re-examine these criteria.

The dilution of research work has become a concern of all. Review of a large number of studies reveals that there are gaps and differences amongst research problems, objectives, interventions and effect inventories. Even after that, there are problems with the evaluation of research reports. It may be desirable to have valid Research and Degree Committees for registration of the candidates. It should be ensured that the RDCs have expertise in the research area. For examination of the thesis, there should be minimum three external referees at a time in addition to the internal referee. There should be open viva -voce for Ph.D. work evaluation.

g. Establishing Test Characteristics of Question Banks

Developing question bank in any area is a difficult task. But more difficult is to establish the characteristics of the test items domain-wise. The difficulty value and discrimination index of the items need to be studied carefully before including them in the question banks.
MEASURES TO REDUCE MISMATCH OF TEST VERSIONS IN DIFFERENT LANGUAGES

Very often an expert constructs a question in a language and then translates it into another language required in an examination. Sometimes it is done by the same person. At other times, it is done by different persons. Possibility of errors increases when the translation is done by the other person. Normally, those examiners should be appointed who have command on both the languages or else the parallel between the two versions needs to be established very carefully.

h. ESTABLISHING A CODE OF ETHICS FOR EXAMINERS

All examiners should observe a code of ethics of examination. Objectivity, confidentiality, and examination culture need to be fully observed.

i. COMPATIBLE SCALES OF MEASUREMENT

Up to how many point scales the experts would be in a position to measure the reality against as per the nature of reality should be determined very carefully. Every reality cannot be scaled by every scale. How many point scales should be there in social sciences, physical sciences, fine arts, performing arts and commerce needs to be evolved discipline- and domain-wise.

j. REGISTER LANGUAGE AND SPECIFIC DISCIPLINE TESTING

In disciplines like Languages, Sciences, Technology, Performing Arts and Visual Arts, there should be more focus on performance-testing. Rather than part and atomistic testing there should be added focus on holistic testing. Also, testing should be register-specific. Science has its own language, Psychology has its own language, Commerce has its own language, Art has its own language, Culture has its own language. Thus, there are several register-specific languages within a language. Rather than syntax and various other mechanics of writing, we need to examine the language of specific communication context-wise and discipline-wise.

K. STRENGTHENING CENTRALIZED ADMISSION TESTS

There is a need of strengthening centralized admission tests in all the disciplines. The relative predictivity of different variables should be established thoroughly for relative admission weightage. For realizing this objective regression, equations need to be evolved stepwise amongst independent variables and criterion variables. Very often equal weightage is given to performance on different
predictors for predicting performance on a criterion discipline. The relative weightage for different predictors needs to be worked out systematically. The criteria for admission into various programmes and positions, such as, Teacher Education, Arts, Science, Commerce, Medicine, Engineering, IAS, IPS, etc. need to be worked out carefully. For example the regression equation for the prediction of Educational Competency could be as follows:

\[ Y = .424X_1 + .950X_2 + .397X_3 + .454X_4 + 27.437 \]

Where
\[ X_1 \] is language ability
\[ X_2 \] is Teaching Aptitude
\[ X_3 \] is General Mental Ability
\[ X_4 \] is Social Sensitivity, and
\[ Y \] is Educational Competency

**Post-administration Determination of Cut Points**

Very often the cut scores, such as minimum pass marks, second class, first class and distinction marks are fixed pre-administration of tests. These cut scores may vary from discipline to discipline and test to test. Ensuring the credibility of the education system in different disciplines, these cut scores may be determined post-test administration. The scores obtained in a discipline in addition to the competencies of a person are a function of the nature of discipline and characteristics of test also. Lack of harmony in the examination system among various examining Boards and Universities becomes very evident when we are told that the pass rate in one of the Boards was 50\% and in another 35\%. Here it would be wrong to assert from this difference in pass rates that students of one board were more hardworking or intelligent than of the other. This difference may be attributed to the different standards of examination of the two Boards. The pass rate in the examination should be decided carefully, subject-wise, depending upon the country’s academic needs. Formulas may be worked out very carefully for scaling up or scaling down the marks obtained.

**Ensuring Comparability in Standards Across Different Universities in the Country**

When there is need for comparison between the results of two students who passed their exams from different universities, then instead of making the comparison on the basis of marks obtained by them we should examine their rank in their respective universities. But the number of students appearing for an examination is rarely the same in different universities. Then it is better to compute the Ranking Quotient. By Ranking
Quotient (RQ) of a student is meant the ratio of his own rank to the total number of students of that discipline. Again a student with smaller RQ than another will be regarded as a better student. RQs of a student for different subjects will have the same significance as that given to marks for that subject. Accordingly, we shall have to adopt a new measure to replace or supplement the total marks obtained. We shall call this measure the Percentile Cumulative Rank (PCR) and it will be the average of the student’s RQs over the different subjects passed by him multiplied by 100. PCR of a student will be a number greater than zero and less than 100. If a student’s PCR is 9.77 then he would be considered to be among the top 10% students, and his performance in the examination could be regarded better than 90.23% students.

SHARING OF CREDITS INTRA-UNIVERSITY AND INTER-UNIVERSITY

Rarely is there a sharing of resources and courses even amongst the different departments of a Faculty. Sharing of courses and credits amongst the various departments of a Faculty should not be difficult. Also to promote multi-disciplinarity, some universities have tried that every student of a Faculty would opt for one course offered by another Faculty on the basis of mutual sharing of credits.

Micro-specialization has helped people to develop their expertise in selected areas and disciplines; at the same time, however, it has forced them to live in their narrow shells. These boundaries and close systems have multiplied to the extent that there is inbreeding suffocation, and we like to open up. Universities are lacking in their networking and function more or less in isolation. Could different universities share their courses with one another?

To begin with, sharing of courses seems to be more feasible between an open university and a conventional university. But the question remains: How to realize this interconnection? A candidate in a programme can opt for some of the courses from a conventional university and other courses from an open university. Nodal Centers may be established to realize this interconnection for strengthening the same discipline or multi-disciplinarity.

For example, a large number of Teacher Education Colleges have come up during the previous decade under the umbrella of the NCTE. What to talk of professionals, even a lay person can see that we are grossly compromising on relevance and quality. Teachers are the global need. Can the established departments of different conventional universities and Open Universities intertwine functionally?
NRT as Against CRT and IRT

Theoretically, the education system has arrived at all the three forms of testing, namely, Norm Referenced, Criterion Referenced and Item Response Testing. But largely the education system has been employing the NRT, wherein the norm is the group performance. Here the concern is that of central tendency and variability. Rare attempts are being made to have self as referent - past and present. We have been indiscriminately providing the similar inputs to the heterogeneous mass both at the level of instruction and evaluation, whereas they require differential inputs. Item response theory is on paper only. The evaluation for various purposes should have a valid theoretical base.

Testing should be at the level of the candidates, neither below nor above. Item response theory needs to be applied to formulate items corresponding to the levels of examinees. Item response theory has been used with tests on which examinee performance is a function of latent trait. Item response theory estimates an examinee’s ability and item difficulty on a continuous scale which ranges from minus infinity to plus infinity. Item response theory estimates three important parameters for each item - item difficulty parameter, discrimination parameter and guessing parameter. Item difficulty, item discrimination and item guessing parameters are invariant across different level samples. Person-ability estimate is independent of the particular sample of test items. Standard error of item parameters and person-ability estimate are provided. Addition or subtraction of items is possible to modify the test for different purposes. IRT assumes uni-dimensionality, local independence and Item-Characteristic curve.

More Emphasis on Product and Lesser on Input and Process

Our education system has become examination loaded. Let us ask a question from ourselves: Have we provided adequate inputs for evaluation? If the inputs and processes are taken care of, then the yield and the quality of the product is automatically assured. So we should have added focus on input and process aspects to ensure the quality of products. There should be a match between input inventory and evaluation inventory.

Evaluating Only the Intended Learning and Indifference Towards De-Learning, and Nurturant Learning

Very often the examination tends to ascertain the intended effects. Examination of nurturant learning and de-learning is equally important. Due weightage should be given to the evaluation of all forms of learning. It can be realized by including items and situations corresponding to the possibility of different forms of learning.
PERCEPTUAL VARIANCE TO THE SAME REALITY

Perceptual variance to the same reality does not require any elaboration but it is highly disturbing when there is a difference of evaluation score to 80 points on the same script by the two examiners and both place arguments in favour of their respective evaluations. It is evident that our evaluation criteria are arbitrary as against normative. There is a growing chaos in our educational system with respect to evaluation. Evolution of the normative criteria is likely to bridge the gaps amongst evaluations by different examiners.

COGNITIVE MAP ANALYSIS

There is a need for cognitive map analysis of learning particularly through the mediated programmes. It may be more appropriate because cognitive map of an individual reflects the various contours of learning and hence can serve as a powerful indicator of an individual’s learning. It can explore in addition to the quantum of learning the quality of an individual’s learning in terms of learning of concepts, propositions and schema. A sense of mental information representation for knowledge structure (the schema) of an individual after the learning encounter is a bare necessity for assessing the meaningfulness of his learning. It can explore the features of non-learning or learning misconceptions. This could yield data pertaining to how and why a mediated instruction failed and thereby could provide formative feedback for better educational mediated production. It has been evident through research that in most cases the distorted transaction of the message items is more than the meaningful transaction. The learner’s cognitive maps contain large amount of feeble and blurred concepts and propositions, chiefly inadequate learning, confusion, some amount of over-learning and marginal over-generalization. Meaningful and distorted transactions of the concepts and propositions exhibited distinctive relations with message type, message form and message track. Those basic relations could be instrumental for improving mediated production.

RELATIVE EMPHASIS ON FORMATIVE AND AT-END EVALUATION

It has been observed that largely the education system lays emphasis on at-end evaluation wherein there is little scope for diagnosis and remediation. Our examination system should lay adequate focus on formative research and formative evaluation. Only the terminal at end evaluation serves the purpose of mere certification and not that of quality control. So in our education system there should be due emphasis on formative evaluation. Our examination system should be constituted of periodical tests, assignments, project work, as well as terminal test.
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**Arbitrary Criteria for Practical and Viva-voce**

Practical examinations and viva-voce have largely lost their credibility. Very often the evaluation criteria in practical examinations and viva-voce are not well specified. There is a need to work out the criteria objectively. The evaluation criteria should be communicated to all the members of the viva-voce board, and examiners for practical examinations well in advance and these criteria should be fully observed while evaluating.

**Questionable Time Available for Setting Question Papers and Evaluation of the Scripts**

For external examination very often the time available for setting the question papers is inadequate. As a result the characteristics of the items and question papers, such as, originality, reliability, validity, difficulty value, facility index, representativeness and comprehensiveness are not properly established. Similarly, the examiners get very little time for evaluating the examination scripts. Then the question arises: How are the scripts evaluated? The time devoted for evaluation of scripts should be decided scientifically. The educational institutions and agencies should make sure that the evaluators get adequate time for evaluation of the scripts. How can an essay type examination script, which has taken three hours for completion, be examined within a few minutes?

**Inter-conversion of Grades and Marks**

Should grades and marks be inter-converted? But functionally it has to be done for various purposes. Different Universities follow different formulas for conversion. For example, in one of the Universities, computes percentage score on the basis of 8.4 x GGPA + 8.1, meaning thereby, that if a candidate obtains a GGPA of 10 then his percentage score is 92.1%, whereas, in another University the percentage score is computed by 10 x GGPA, meaning thereby, that a student obtaining a GGPA of 10 gets 100%. Marking and grading systems have their own identities. Their identities should be observed and respected.

**Relative Utility of NET and SLETs**

National Education Testing and State Level Eligibility Testing for Research/Placement is a quality control mechanism. Out of the candidates who attempted NET and SLET both, some could qualify neither, some could qualify one of the two, whereas some qualified both. What should this be attributed to? Can this be attributed to the relative level of readiness of a candidate? Can this be attributed to relative level of the NET and SLET? However, NET and SLETs should be at the parallel substance and
difficulty levels. Let us say that out of the two candidates one has qualified SLET only and the other one has qualified NET only. In the situation, who should obtain higher credit for placement provided the rest of the profiles of the two candidates are at par? Naturally the one who is NET qualified because the NET qualified candidate has competed with a larger mass. There is a need of enhancing credibility of NET and SLETs by improving upon the standards of Research and Teaching Aptitude Tests. Due care should be taken while examining the scripts of essay-type responses.

**Faulty Mechanism to Differentiate Between 99th and 98th Percentiles**

Very often the viva-voce/ interview/ selection committees fail to discriminate between 99th and 98th percentiles. Even if they are capable of doing this, then sometimes they are governed by the extra academic evaluation criteria. There should be open interviews for placement. The selection committees should be democratically constituted drawing from a big bank of experts randomly.

**Credit Transfer, Student Mobility and Mutual Recognition**

There is a disease of ‘un-touch-ability’ in some of the Universities. Some of the conventional universities do not recognize the products of the UGC recognized Open universities for vertical mobility and placement. Why so? On the other hand we lecture on transfer of credits of a candidate in a course from one faculty of a university to another faculty or from one university to another university. When shall we realize and inculcate mutual faith, mutual trust and mutual compatibility? A sizeable number of the universities are not in a position to declare their examination results in time. How will they promote inter-disciplinarity by transfer of credits from one faculty to another and from one university to another? We need to evolve healthy designs and implement them carefully. There is a need of networking different universities for realizing mutual strength. It should be mandatory for a student to opt for at least one course from another discipline/faculty. There should be resolutions by the universities not only for transfer of credits but also for sharing of credits.

**Only Measurement and No Evaluation**

The educational scenario reveals that our education system terminates at numbers, in other words we stop at measurement. Value judgment in terms of relevance, quality and utility is grossly missing. We have been scanning the cognitive areas. Affective domains are largely untouched. Faulty admission criteria, incompatible inputs, and deviant evaluation criteria have made a mess of education. Every year the universities confer
It is highly desirable to disseminate innovations already tried in the areas of Examination. Some of the Universities and Institutions, namely,
Manonmaniam Sundranar University, Abishekapatti, Tirunelveli-627012, Sri Chandrashekarendra Saraswati Vishwavidiyalaya, Enathur, Kanchipuram- 631561, Seethalakshmi Ramaswami College, Tiruchirapalli-620002, University of Madras, Chennai-600005, Pondicherry University, IITs and Indian Institute of Science have already introduced Choice Based Credit System. The best practices could be tried out in a phased manner. The Jawaharlal Nehru Technological University, Kukatpally, Hyderabad- 500072 has successfully tried electronic distribution of examination papers. Would other universities like to learn from the experience?

Some of the institutions have inbuilt double valuation system, particularly at the post-graduation level.

**Conclusion**

It is high time that we ensure comparability in standards across different universities. Measures like Ranking Quotient and Percentile Cumulative Rank need to be introduced.

There is a need to share credits intra-university and inter-university. Also, there should be provision for Credit Transfer, Student Mobility and Mutual Recognition. Most of the higher education institutions are working more or less in isolation. There is a need of sharing resources as well as courses within institutions, between conventional and conventional universities, open and open universities, and conventional and open universities.

The present age of Information and Communication Technologies in Education necessitates cognitive map analysis of the learners in terms of meaningful or distorted transaction of message, adequate or inadequate learning, intended effects and side effects, feeble concepts or comprehensive concepts. There is a need of developing voluminous question banks having well established characteristics of the items for automated testing and online on demand examination. How such question banks could be developed discipline-wise?

Rather than secret and confidential, examination should be transparent. It should be based on public monitoring tools involving all the stakeholders, such as, teachers, students and parents. There should be a shift from content and knowledge testing to proficiency and skill testing. There should be equal emphasis on process and product evaluation. Rather than labeling pass and fail, the examination should show proficiency in varied areas, scholastic and non-scholastic. There could be two levels of an examination – higher and lower. Lower level should be compulsory, whereas, higher level optional. Performance on higher level should only be considered for vertical mobility. Subject experts, professionals, teachers, students, testing experts – all should be involved in question paper setting. 
Due weight may be given to self-assessment and peer assessment. There should be post-examination question paper review besides the prevalent practices of pre-examination question paper analysis. There should be multiple sets of equivalent Question Papers to control unfair means. There is a need to strengthen innovations, such as, choice based credit system and electronic distribution of examination papers.