Examination Committee Report

Part I   Introduction

1.0 Background

The present committee was set up by the Kerala State Higher Education Council (KSHEC) in October 2009 with the following members:

1. Prof. Jacob Tharu, former Professor of Evaluation EFLU(CIEFL), Hyderabad
2. Prof. N.J. Rao, former Chairman, CEDT, IISc. Bangalore
3. Dr. C.N. Subramaniam, Director, Eklavya, Bhopal
4. Dr. Renu Gupta, Consultant for Educational Technology
5. Dr. C.P. Chitra, Director, Higher Secondary Education, Govt. of Kerala, Thiruvananthapuram
6. Shri. V. Rajagopalan, Controller of Examinations, University of Calicut
7. Prof. A.S. Varghese, CMS College, Kottayam
8. Prof. Achut Sankar S. Nair, Member EC, KSHEC, Thiruvananthapuram

This followed a series of initiatives by KSHEC to renew and reform the degree-level syllabus in the light of new conditions and challenges. Given the powerful and often negative influence of examinations on educational programmes, further steps towards the reform of examinations to support these curricular initiatives became urgent.

The committee was not given specific terms of reference. However, its charge may be seen as flowing from the observation in the report *Restructuring Undergraduate Education* (RUE, 2008) under **Pattern of Questions** (Section 14):

> "Examination reforms are absolutely essential to bring in desired effects of the proposed restructuring. Questions which require simple memory recall do not help in assessing the achievement of objectives ….The school education system in Kerala has already switched to a *creative assessment process* (sic) and the higher education system needs to follow suit."

The term *questions* here stands for the *range of means of assessment* that are provided in formal examination schemes with their external and internal components. The committee's task was to analyze the current 'examination system' in universities in Kerala in a comprehensive manner and formulate appropriate measures— both short-and long-term— towards reform.

The committee's mode of operation was a conventional study of documents and discussions at the KSHEC office. For logistical reasons, site visits to colleges to meet teachers, students, and officials were not part of the proceedings. However, there was one extended face-to-face interaction with a group of stakeholders, including teachers, BoS members, Controllers of Examinations, and Pro V-Cs from different universities that was very informative about the progress and challenges they faced in implementing the recent changes in syllabus and examinations. In addition, various stakeholders provided written responses to the pre-final draft report that was circulated in October 2010 and some stakeholders shared their views at a meeting organized at KSHEC on October 27. These have been considered in preparing the final report.

1.1 Conceptual preamble: Interpreting the mandate

Examination reform has been a prominent theme in discourse on public education for decades. The word *examinations* rarely occurs without being attached to the word *reform*. The manner in which examinations —student assessment—has taken shape in educational programmes at all levels has long been an area of deep concern. Recommendations and pleas for the improvement or reform of examinations have been formulated and reiterated fervently over the past half-century or more from the time of India's independence— both by high-level commissions and at seminars and conferences — but have apparently had little effect since the same complaints are heard over and over again. This fact that several reform-oriented efforts — even by various competent and empowered agencies — in the past have had minimal impact, if at all, on the larger system contains a lesson. There is clearly a source of powerful resistance to change in the 'system' that is dominated by the external final examination in the affiliating university structure. Serious effort is called for to analyze *root causes* in the complex processes of centralized evaluation in the affiliating university structure. The present exercise thus needed to be founded on a phase of analysis and discovery, avoiding the option of merely dealing with easily identified flaws and ready solutions.

Conventional examinations are widely seen as tests of memory, thus failing to keep pace with developments in curricular thinking. With regard to the objectives of modern courses developed in recent decades they are woefully inadequate as they do not assess important higher-order abilities and other qualities. Their washback effect on teaching-learning processes is nearly always negative — promoting unimaginative teaching and study preparation. Examinations are universally associated with anxiety and stress for both students and for others. Their high-stakes status also leads to various malpractices that reduce their dependability and credibility. Removing this blight on the quality of education is as much a concern in examination reform as enhancing the soundness/ accuracy *per se* of assessment.

In order to have a frame of reference for further discussion, a sketch (structures and relationships) of public examinations is considered next. This helps to identify points of contradiction or weakness.

1.2 *System of external examinations at the university level*

The assessment of the progress of students towards the objectives of programmes of instruction (is done through the achievement test. Most achievement testing at the school stage is carried out at the class or school level. The public examination conducted by the relevant Board is an *external* achievement test that serves the purposes of assessment and formal certification. The certification (of completion and level of progress) is used by other agencies for decisions relating to admission, placement, recruitment, and scholarships applied to the individual candidate. This makes the public examination and its results a high-stakes matter for individual students, with associated tensions. Tertiary-level education in the affiliating university pattern is marked by the dominance of the external final examination, and the resulting marginalizing of ongoing in-semester assessment conducted internally by the concerned teacher. This emphasis on final/terminal results makes the approach to teaching/learning similar to that associated with competitive examinations, namely, tuitions and coaching. A large part of the baneful influence of examination on education may be attributed to this near-exclusive focus on getting 'good marks' in the final examination.

The academic quality of actual examinations (question papers) has long been a major complaint. Low-level questions asking only for memorization, poorly worded questions and the consequent inconsistency in marking, and other similar flaws have persisted despite repeated calls for rectification. The inertia in the system is a root cause that needs to be understood and tackled.

The logistics of conducting examinations are formidable. Vast numbers of students need to be tested simultaneously at dispersed centres for *each paper* in the examination schedule, awards from

markers of separate subject papers need to be integrated into each candidate's composite grade sheet, while meeting requirements of confidentiality and speed. Rigid adherence to procedures is necessary for the system to work. Most universities have generally managed this process well, and there is evidence of ongoing improvements in the machinery of public examinations, especially through computerization. .

The core problem of poor quality of question papers is part of the rigidity of a vaguely understood 'system'. It is important to distinguish between two sub-systems here. One is the more visible machinery operated by the CoE which is in actual practice only a means of *delivery* of tests prepared by subject specialists. The second is the *academic sub-system* (boards of studies in separate subjects, paper setters and markers for each paper). The responsibility for the design of valid and reliable tests lies in this academic sphere. The CoE's machinery does *not* restrict the freedom of subject-related bodies to improve question papers. The latter are clearly not discharging *their* responsibilities in respect of examinations, as presumably there is a lack of clarity regarding their duties and a mismatch between their modes of functioning and the regular cycle of examinations which requires new question papers every semester.

Modifying the manner of functioning of subject-linked Boards of Studies so that specification of syllabus objectives and related examination schemes is dealt with thus emerges as a major issue in examination reform. This is taken up in other sections of the report. A fuller discussion of the points highlighted in this section is provided in a note titled "A descriptive model of examinations in public education" in Appendix A.

This general picture of examinations in higher education has to be modified in the case of Kerala, since a number of developments and reform-oriented measures have been initiated in the state in recent years. It is important to review progress that has been made and build on this base. This is taken up in the section that follows.

1.3 The Setting of University Education in Kerala

Changes in the structure of the undergraduate curriculum and in examination policy have already been put in place. A review of these developments will help focus the report on issues that are relevant to the current setting.

The vision inspiring the restructuring of the degree programme talks of comprehensive reform based in part on features such as flexibility, choice and learner-centredness. The eventual target is the course credit system where design, teaching and evaluation are in the hands of the individual teachers in college departments. Students would have the freedom to opt for courses outside their specialization area, and can even choose not to be tied to one specialization. The conventional structure of a degree with an area of specialization is determined by a self-contained and inward-looking view of parcels of knowledge 'owned' by departments. The aim is to loosen rigid *requirements* to which the student must fit and accommodate the individual student's own sense of what comprises a useful, relevant (and interesting) set of courses.

The curricular approach favouring autonomy and agency on the part of teachers and learners is significantly supported by important structural reforms. Notable among them are the introduction of: the grading system for student assessment, the semester pattern for courses, and the weight for internal (in-semester) assessment set at 25% with increases proposed. The new types of courses — core courses and interdisciplinary courses —call for imaginative selection of content and a plurality of 'methods' for teaching and assessment. With regard to these, the absence of an existing (and

often retarding) tradition allows, indeed demands, bold and innovative practices in developing courses through collaboration between departments.

The sizeable weight for internal assessment (compared to the norm across the country) is a major step. Although it has generally been welcomed in principle and put into practice, problems of implementation have been encountered. This is a major issue to be addressed.

The main problem is the incomplete development and articulation of relevant and systematic schemes for internal assessment suited to the needs of *different subjects* and different levels (year-wise) of students. A somewhat standard formula (tests + presentation + term paper) is followed by default, which teachers find difficult to manage within the time available in a semester and which students find burdensome. Regrettably, this has led to adherence to form with some trivialization of substance in colleges. Further, teachers have not received sufficient support by way of clearly spelt-out schemes specific to their subjects and effective orientation through manuals or workshops. The general lack of clarity has led students to perceive internal assessment as low in objectivity and transparency. Ways to pre-empt complaints in this area and the creation of a mechanism to deal with student grievances must be priority concerns.

The examination scheme remains heavily weighted in favour of the summative external examination, the quality of which is one of the biggest problems of our system. Many needed changes have been identified but not adequately followed up. Serious attention needs to be given to finding effective mechanisms for implementation in the present setting. The main challenges lie in the academic component of assessment, not in the machinery for conducting (delivering) examinations.

This brief review suggests that the main thrust of the proposals in the report should relate more to the consolidation and extension of initiatives already taken, than to the identification and articulation of major new elements of *reform*.

Before proceeding to a discussion of desirable practical changes in the present system, a brief review of recent developments in the general discourse on evaluation in education is taken up. Taking note of current perspectives in the field is a worthwhile exercise even if many new ideas do not seem immediately relevant.

1.4 Recent Developments in Thinking about Evaluation

1.4.1 A new paradigm

Evaluation in education is a disciplinary area which is the site of active discussion, debate and research. Following the far-reaching changes in conceptions of learning and approaches to teaching/ instruction over recent decades, the basic premises of "pupil assessment" have also been modified or extended to accommodate these new notions. One major change is the shift in focus from the quantum of the store of pre-packaged knowledge received and held by the student to the more dynamic knowledge gained by active participation including knowledge construction by the learner: in other words, from inert product to processes and capacities that point to continued learning. Originality and creativity, though they are harder to assess objectively than the recall of systematically organized knowledge, are priority targets for assessment in the information age. A second significant change is the shift in primary orientation from assessment **of** learning in a summative and external audit mode to assessment **for** learning in a formative and self-regulatory mode. In the larger field of psychological testing, the notion of validity has been broadened beyond the technical accuracy of the instrument to include the validity of the interpretation and uses made

of results obtained, and this has led to the notion of consequential validity. The new questions are about the impact of larger enterprises centred on the testing of groups of persons and dealing with them differently using test-based classifications. Has the intervention raised learning levels and teaching quality? Has it promoted equity and justice? Have negative stereotypes relating to certain groups been inadvertently reinforced?

1.4.2 Wider purposes of assessment

Developments in technology have made available many techniques for the assessment of learning, and this expanded toolkit is to be welcomed. However, the new thinking about assessment lays more emphasis on the purposes that *tests* (used here to represent all means of assessment) serve within the wider concerns of education.

In the conventional view, only the administrative uses (admission, promotion, scholarships, etc.) of standardized summative tests of student ability have been recognized and valued. Other purposes are better appreciated today, the most important being the use of test data as feedback for both learners and the instructional system that can be acted upon to improve matters. This is the essence of the powerful notion of *formative evaluation*. Tests with a diagnostic orientation are used to assess learner needs at a group level and plan relevant instruction. Research on teaching and curriculum often uses specially designed tests administered to a sample of learners to study the effectiveness of methods, materials, technology inputs, collaborative learning, etc. There is an established convention in some countries which makes syllabus revision (undertaken by Boards here) a qualitative exercise. Curriculum renewal is often based on such empirical data: this goes far beyond the mere addition or deletion of topics. Teacher-made tests used in class in a relatively informal and non-threatening atmosphere are considered to have high pedagogic value, especially when an element of self-assessment or peer assessment is included. There is greater recognition of the importance of thoughtful preparation of classroom tests so that they provide relevant and useful feedback to learners. Informality of administration does *not* mean crudeness in design: this has been a common misconception. In fact, useful feedback needs to be of high quality – based on fine-tuned tests. When the focus is not entirely on the assessment of individuals for formal certification, a space is created for pedagogically valuable elements such as group activities, peer assessment, and students' contributions to test tasks. Frequent encounters with such low stakes but cognitively challenging tests in a supportive setting reduce test anxiety, and also help prepare students for more important examinations.

All these observations point to a new philosophy of evaluation which emphasizes the improvement of instruction rather than its inspection. It is reassuring that the vision statement of the RUE report alluded to earlier is aligned with this perspective. The substantive part of the present report which is presented now follows this lead.

1.5 Preview of issues

Part II which follows comprises the substantive part of the present report which is informed by the general ideas and specific contextual factors noted above. It first discusses enabling conditions that must be met before changes/improvements in the core process of student assessment can be put in place. It then surveys modes of syllabus formulation and related assessment devices that are available and relevant today that need to be drawn upon. Most of the concrete steps towards improved quality suggested later flow from this discussion. Other wider issues that have implications for a trustworthy and efficient component of public examinations and for a healthy and sustainable culture around assessment procedures are also considered. This segment of the report is meant to serve as a resource of statements of relevance and rationale on which the final

recommendations are based. It can be returned to for further discussion when specific recommendations are being considered.

Part II   Identifying and clarifying the issues

This section contains 13 themes numbered I to XIII. Each has an initial key statement (shown in large font) followed by an extended discussion. The themes are grouped under certain broader categories with titles.

2.1 Creating enabling conditions for improved assessment

I.   Assessment of learning from instruction is technically the process of achievement testing, which is governed by the requirement of content validity. The attributes assessed should be those targeted by the syllabus and, hence, also by the instructional process. Assessment has to be aligned with the learning objectives specified in an appropriate mode. Many weaknesses in current assessment practice follow from the inadequate articulation of abilities to be attained through *specific courses* in various subject areas. The clear formulation of objectives in formal syllabus statements is the first prerequisite for modifications/improvements in assessment. The responsibility lies with academic boards representing the subjects/department, and not with the paper setter who has to follow a given pattern.

Discussion

There are many qualities and abilities of students that are justifiably considered to be desirable, even necessary, and ways of assessing them might be available. However, assessment linked to a particular course (through the *achievement* test) is governed by the pre-set learning objectives. Assessment practice and improvements thereof depend on the basis provided by the syllabus of each course.

An adequate syllabus statement should go beyond a list of topics. A course should provide, alongside the list of topics comprising its knowledge field, indications of the manner and level of treatment of the ideas involved —mode of cognitive engagement—to guide teaching and assessment. In many subject areas, various topics are found repeatedly in syllabus statements at different levels: higher secondary and degree, for example. It is in terms of such depth of cognitive engagement (rather than quantum of information *per se*) that the crucial difference between educational stages lies. Clarification of this aspect would point to the *abilities to be developed* through instruction, and then assessed. These descriptions of what has to be *learnt* (as distinct from *taught*) help ensure   that the 'covering of portions' is through *relevant teaching-learning activities* , which in turn form the basis of *valid* assessment tasks.

The typical course syllabus has remained virtually unchanged over decades, consisting of little more than a list of topics, with a model question paper unaccompanied by meaningful clarification of the abilities demanded. In the absence of more meaningful suggestions and guidelines for transaction of the subject matter, teachers and students tend to rely on examination papers from previous years and readily available guidebooks as the indication of 'objectives'. **By default instruction is effectively reduced to coaching for examinations.**

The RUE report calls for a move from questions that require simple memory recall to "a judicious mix of questions which assess (i) knowledge acquired, (ii) standard application of knowledge, (iii) application of knowledge in new situations, (iv) critical evaluation of knowledge, and the ability to synthesize knowledge drawn from various courses…" (Section 14). This assumes that *syllabus designers* have identified course components which involve these levels of cognitive operations in curriculum transaction. The argument is that a higher-quality question paper can be prepared **only if** the syllabus points to higher-order abilities. A major initiative towards more complete syllabus descriptions is needed on the part of syllabus creators. Reference materials and other resources to support such activity are available, and need to be drawn upon.

Learning Outcomes: A meta-language for indicating course objectives

The focus of the 'demand' from an assessment perspective is on *the manner in which learning goals are expressed*. It is not concerned with the nature of the goals adopted or the substantive content selected for a course. A course syllabus is a scheme that frames the real-time activities of a teacher and a group of students with learning on the part of *individual students being the immediate aim*. The terms *objectives, learning outcomes, and behavioural objectives* in the register of educational testing or measurement refer to the **descriptions of the abilities and other qualities a course seeks to develop in students**. The domain here is psychological and this points to the appropriate terminology. Such descriptions provide a map that would guide both teaching-learning and testing, and are regarded now as an important component of syllabus specifications. What is involved crucially is *the linking of topic/content with a level of cognitive activity*. One widely used scheme for describing objectives, i.e., targeted learning outcomes, is the Bloom Taxonomy; others are also available. Such schemes provide lists of terms describing cognitive processes involved in engaging with ideas (subject matter for study). These terms allow the specification of the appropriate 'level of treatment' for each topic or cluster of topics as intended by the developers of the syllabus in a manner that both teachers and testers understand and accept.

It is important to recognize that there are *variations across parent disciplines* in the way knowledge and ways of learning are represented. As a result, the ease of specifying learning objectives varies. Courses in technology and science and skill or application-oriented courses (academic writing, computer programming) are more amenable to the specification of such *detailed and agreed upon* learning outcomes than are ones in the social sciences and humanities. Yet the need for indications of learning goals to guide teaching and assessment remains, even if it is necessary to *accommodate different approaches*. The important principle is that there should be a means of communication between the syllabus framers and those concerned with assessment. The organization of seminars and workshops for sharing ideas and experiences across departments is a way to facilitate the task of formulating objectives. Subjects for which objectives formulation is more challenging should be given special attention.

One dimension of course objectives is of special relevance for assessment: their level of complexity and challenge. The assessment tasks used for any given course can only be a small sample of what the course actually covers. The assessment package for a course should be a systematic selection and not a random assortment of tasks. A rational way of sequencing tasks according to complexity is needed, especially for internal assessment. Well-written learning objectives provide this basis.

The importance of comprehensive course descriptions

Comprehensive descriptions of the expected outcomes of a course are needed for *the guidance of students*. Students rely on course descriptions to select courses and plan their study. Further, as noted earlier, there is provision in the restructured degree programme for students to take courses outside a narrow area of specialization and indeed across faculties following their interests and

priorities. Each standalone course of this type would be selected on its 'merits' as apparent to the student-shopper, and clarity of objectives is an important factor.

A programme of training workshops for teachers in the broad area of curriculum development has been initiated by KSHEC. These need to be continued and extended as they provide the basis for improved assessment.

***Appendix B1** contains examples of (a) a topic-wise syllabus, (b) programme outcomes, (c) sample learning outcomes, (d) a course description, and (e) a teaching plan for the course.
***Appendix B2** gives samples of work *in progress* on course descriptions produced by college teachers at a workshop organized by KSHEC.

II. The agency responsible for developing a syllabus that incorporates appropriately specified learning objectives for each separate course is the relevant academic board. This task has not been attended to satisfactorily despite repeated calls. The reasons appear to be:

(i)   An inadequate understanding/interpretation of the essential functions of boards, and/or

(ii) The absence of relevant technical guidelines and models, and of related specialized knowledge and skill on the part of members.

The duties and rules of procedure of such boards need to be revised urgently to specifically include syllabus development and formal statement/notification according to approved guidelines. A template for the proper description of a course (syllabus and examination scheme) should be prepared by the university for mandatory use by all boards.

III   The writing of learning objectives (linked to subject matter and students' level of academic preparation) in various types of courses requires familiarity and a modest level of expertise relating to basic principles and procedures in curriculum design and instructional technology. As stated in the RUE report, " [c]urriculum design needs to be professionalized" (Section 13). A facility for imparting suitable orientation/ training in these areas to transient (rotating) members needs to be set up. This would need to be a permanent or ongoing programme. Improved curriculum development is a relevant concern in itself, apart from the benefit for assessment

Discussion

The plea for "clear(er) specification of course objectives" is a standard verse in the litany of examination reform. However, there is virtually no evidence of appropriate concrete steps having been initiated or taken up by the *academic bodies responsible* for this over many decades. Thus one crucial and primary component of examination reform—an indication of what is to be assessed in its proper syllabus setting—has remained unattended to. There seems to have been no agency specifically responsible for this component of the academic basis of assessment.

The review in Part 1 above highlights the inertia in the system which has settled into a comfort zone around a pattern of unchanging low-level questions. It is noteworthy that well-formulated course objectives *have* been developed a number of times for various subjects at various locations. But this has nearly always happened at examination reform workshops and these initiatives have been totally ineffective in influencing approved model papers. Even where 'improved' question papers have been developed in specific subjects, these have invariably run into the road-block of moderation that protects the *static model paper*. Boards which have the necessary mandate to make changes are clearly neither pro-active nor receptive to initiatives of other agencies.

The existence of this inertia has a further implication. When syllabus-level articulation of learning objectives is taken by boards (as suggested here), the proposed revisions will run into the entrenched tradition **around the existing (stable) model paper** which allows a low-level interpretation of instructional objectives. The communication of the new patterns to the relevant constituency of teachers and learners has to be **powerful enough to counter this heavy retarding pull.**

It follows that the conventionally understood *mandate/responsibility of Boards of Studies needs to be revised* to match the demands noted above. This calls for far-reaching changes in the way these bodies function.

2.2 Promoting decentralization

IV   The educational vision behind recent general reforms is founded on two premises, among others. One is the recognition of the plurality of perspectives on *knowledge* which makes it a fluid entity as against an inventory of fixed units. The other is the move towards *decentralization* of academic power and responsibility which gives agency and autonomy to teachers who traditionally only implement what remote authorities prescribe. These values are powerfully supported by the provision for **internal assessment**. The valuable base in universities of Kerala with 25% weightage given to IA needs to be consolidated and strengthened. The full potential (plurality of method and flexibility) allowed should be exploited vigorously. A commitment to progressively increase the weight of this component should make it a matter of policy.

Discussion

The primary value of Internal and in-term assessment is that it allows a more comprehensive assessment of learning than the written final examination. Another advantage is that it serves or can serve a *formative* purpose as distinct from a summative or certification purpose. The many techniques now available for in-term assessment at the college level are surveyed under Theme VI below. The focus here is on the formative purpose of assessment. The information yielded about learners' progress is also relevant feedback on the effectiveness of instruction. This provides a basis for on-the-spot efforts by the teacher towards improvement. This freedom and flexibility for such dynamic adaptation of the given syllabus by the teacher is a significant aspect of the decentralization of academic responsibility and a way of returning agency to the teacher.

It must be remembered that internal assessment contributes to the formal assessment of the student (for certification). It must therefore be handled in a manner that meets the criteria of objectivity and fairness. This brings to the fore the challenge of ensuring dependability and transparency of

assessment carried out at the level of the college or teacher, while preserving the advantages of flexibility.

V   The restructured degree programme is founded in significant measure on progressive decentralization of academic decision-making. Course planning and teaching are to move closer to the college or teacher level. Assessment practices can further this process. The *question bank*, regarded here as a generic concept rather than a structure cast in one fixed mould, represents a potentially powerful means of fostering the wider participation of teachers and active collaboration among them.

Discussion

The complete question paper is the basic unit for external examinations: setting, printing, packaging and delivery to centres, and the actual examination session (typically 3 hours). Conventional paper setting involves entrusting a single setter/examiner the task of developing the entire question paper for a given course. This assumption needs to be reconsidered in light of concerns about the quality of question papers. Assigning the task to a single person is not founded on any sound academic principles, but has been a matter of convenience along with the overriding concern for secrecy/ security. Two or three setters working together would definitely produce a better paper than any one person can. This has an immediate practical relevance. In emerging interdisciplinary areas, it is unlikely that experts with competence in *all* the topics of a course can be found readily.

One solution exists in the form of *module-wise question paper setting* where each member of a team of setters produces only an allotted section of the question paper. This procedure has many advantages.

- Decentralization of the question paper setting process (via wider participation)

- Restricting the domain in which widely varying individual biases/styles can operate

- Increased chances of proper commitment and attention due to the reduced quantum of work for a question paper-setter.

The obvious disadvantage is the complex logistics of managing the assembly of complete question papers. However, with computer-based word processing and e-mail facilities readily available, this process can be handled with speed and security if there is proper and detailed planning. Module-based paper setting involving 3-4 setters is a first-stage reform. It requires only administrative steps largely at the CoE level and no major policy change. It can initially be introduced in a few courses and then gradually extended to all.

The Central Question Bank: A Formal Structure Operated by the CoE

Setting up a formal question bank is a major reform of the conventional paper-setting procedures that goes substantially beyond modularized paper setting. With a question bank in place the processes of (i) writing/generating items for a pool (bank) and (ii) selecting items from such a pool to construct an actual question paper are totally separated. In the bank development phase, a large number of teachers follow clear guidelines to generate items for the pools relating to given papers. Another person/team scrutinizes these items, edits them if appropriate and places them in categories: topic-wise and according to complexity/challenge. This screened and vetted set of items constitutes the bank, which is actually a series of *separate item pools for different courses*. In the bank-use phase, a designated paper setter (s) selects suitable items from the relevant pool to

assemble a finished question paper. The setter here is a collator of given items and not one who writes new items. This is a basic plan which can be modified. The essential elements are: several teachers contribute items, these are scrutinized and approved for use; and the finished paper is *compiled* from the pool and no new items are used. Of course, the process of expanding/enriching the bank is an independent and ongoing activity. There is a strong case for initial versions of the question bank for a university being experimental and on a small scale, and also not dependent on advanced technology.

This operation involving a series of steps relating to *each course* separately quite obviously has to be closely supervised by the BoS. The CoE can, at most, be the custodian of the approved pools and arrange for setters to access them. It is possible that earlier efforts to develop question banks were not based on detailed planning or attention to logistics by the separate academic bodies, with the result that only the dumping of raw items (without any 'cataloguing') into a so-called bank took place. The CoE was/is in no position to use this hoard in any meaningful way.

2.3 *Improving assessment practice*

VI   The major principle for improving the quality of examinations is that a variety of means of assessment should be used to match the many dimensions of learning aims. The use of many such devices now available is possible only in the local/college setting of internal or in-term assessment handled directly by the individual teacher. They are typically extended activities outside the formal test setting with its conventional restrictions : location in the hall, individual effort, no reference material, time limits, and under direct supervision/invigilation. This relatively new component of assessment comes with certain requirements: (a) teachers must have/develop the abilities needed to devise and administer these tasks; (b) relevant resources and administative support must be available; (c) the requirements and criteria for assessment should be stated clearly so that validity, reliability, fairness of these 'tests' are perceived to be adequate. Students' involvement in these tasks is different in nature than it is in 'silent test taking in the exam hall'. Discussions to provide guidance and clarifications to students are essential here; merely issuing instructions will not suffice.

Discussion

College teachers have gained some experience with conducting in-term assessment over the past few years. However, considerably greater support by way of training and subject-specific reference material is needed. The most effective mode of imparting such training is through workshops that provide hands-on experience under the guidance of resource persons supported by reference materials.
 A bold strategy to reach large numbers of teachers effectively and efficiently needs to be developed and implemented urgently, since *all teachers now have to conduct in-term assessment.* The workshops for curriculum development already under way are provide a useful starting point. Both the teachers who receive training there and the material produced should be used in planning workshops on assessment.

Teachers need to judge the appropriateness of specific devices for various needs especially matching them to the subject matter and objectives of the course, and to students' levels (Semester

1 vs. Semester 4, for instance). This ability can only develop on the job. Collaboration with colleagues in the department and the cluster is an important source of support. Technical information and subject-specific models about these devices need to be easily available to teachers in college departments through manuals, handbooks, materials developed at workshops, and web-based resources. Teachers also have to develop the skill of communicating with students (in the mode of discussion and dialogue) about internal assessment related matters.

From the student's point of view, considerable clarity about an assignment or seminar presentation is required: scope, range of material to be studied, time allowed, permitted help from others, time/ length and format of presentation, and criteria for assessment. Clarifying these matters and ensuring that conditions (the basis of validity and reliability) are applied fairly to all students is the teacher's responsibility.

There is a strong case for departments and the college as a whole to articulate policies relating to IA and prepare and issue a handbook or guide for students. This will be an important resource in dealing with complaints or grievances. This local counterpart (no less important) of the university's 'examination rules and regulations' needs to be taken more seriously than it has been so far.

Maintaining a specified level of attendance is a standard requirement for all full time educational programmes, Withholding clearance for appearing in the final examination is a common penalty. The inclusion of marks/points in the assessment scheme for attendance per se is a contentious issue. This needs to be discussed further.

An inventory of tasks and activities

 The various tasks that can be used at the degree level for in-term assessment are listed below. They are organized into functionally distinguishable categories:

    A. Take-home assignments – short assignments, extended assignments

    B   In-class activities   Laboratory/manipulative skills
                                  Presentations/Seminars
                                    Group Discussions and Role Play
                                    Peer Reviews of student submissions

    C Tests of knowledge: Quizzes and short tests
                                    Self-assessed short tests

Note: A more complete inventory of these activities with notes is given in Appendix B3.

The selection of assessment types for a course should be done carefully based on their appropriacy. First, the choice of a particular type should be based on the ability to be assessed. A list of these abilities— preceded by the syllabus statement — should be the starting point for planning assessment. Second, different disciplines emphasize different skill patterns; for example, the skills taught and tested in foundation courses or computer programming differ from those required in the humanities, sciences, and social sciences. Hence, some assessment types may not be appropriate for some disciplines. Third, the level and maturity of the students need to be considered; entry-level students, for example, may not have the requisite skills to handle research activities that assume knowledge of sophisticated library, interviewing, and writing skills. These should be taken into consideration, and introduced only when students acquire the requisite skills. Fourth, physical constraints such as large class sizes, crowded timetables, and lack of access to library/Internet resources will determine the choice and mix of assessment types.

Overriding all these is the workload —for both the student and the teacher. The switch from an annual system to a semester system means that a shorter time is available for students to do tests and assignments for internal assessment; clearly, students should not be overloaded and only a reasonable number of tests should be set. At the same time, internal assessment, although it provides valuable feedback to the teacher, places a burden on the teacher in terms of marking and assigning grades. This is exacerbated by large class sizes, so that teachers end up marking 60+ student papers for each assignment. Hence assessment types that reduce the burden on both students and teachers should be considered. Objective-type questions are one solution; these can even be student-marked and not included in the assessment; the questions do not have to be simplistic but can be designed to test understanding of complex concepts. Another option is fixed-length responses; a strict word limit (250 words for example) will force students to write clearly and enable teachers to rapidly grade assignments.

The guidelines from departments and BoSs should be broad and suggest several options for internal assessment, leaving the teacher with flexibility to select assessment types appropriate for his/her class: both subject matter and the level/ maturity of students are factors. Encouraging teachers to make informed and responsible decisions is an important consideration.

VII   The external/final written examination remains a dominant component in student assessment. Its weaknesses have been the focus of most examination reform discussion.   Continuously improving these formal and high-stakes examinations should be an active concern of academic bodies and university authorities. A number of improvements have been made at various places. Boards need to attend to the quality of question papers and marking guidelines in their respective areas. The university (represented by the CoE) needs to adopt various measures of a general nature that can enhance the quality of assessment and upgrade efficiency and integrity of operations. Observations from stakeholders (complaints and suggestions) are found in the media. Responding to significant issues and some means of conveying that actions has been taken   by the government, university ishould be found to help dissolve the cynicism about 'the system'.

Discussion

The extended essay is the most commonly used device for timed and supervised formal examinations.   Several variations of the traditional 5 or 6 long-answer essay question paper structure are possible, and many have in fact been used . Certain changes can be introduced without waiting for policy reforms, or for several rounds of training. Boards need to be proactive in this respect.

  Some of new features to be considered are are:

  Structure of the question paper and test administration procedures

   a) Separate sections for objective-type, short answer and essay questions. This could be in the form of separate answer booklets. Specific time limits for such sections can be applied. . Answer spaces can be fixed/restricted to encourage precision in formulation.

   b) Provision for carrying specific types of reference materials to the examination hall. This is a step towards the open book examination.

c) Provision for 'inserting' variable data sets developed at the local/ regional level for standard questions *at the time of administration.* This keeps the structure of the original (sealed) question paper intact, but allows the problem material to be adapted to suit local conditions.

d) The duration of the final examination, typically fixed at 3 hours, could be made flexible by providing for 60/ 90/120-minute test sessions in the master time-table. These may be appropriate for certain modes/ types of objectives—e.g., listening or computer lab-based (with smaller groups) and timed objective tests.

e) Flip-reduced answer booklets. See Appendix C.

f) Instead of having one examiner mark complete answer scripts, different markers can be assigned different sections of a question paper. This is particularly useful in multi-disciplinary courses or advanced courses, where examiners have expertise in different areas/topics of a course. This is greatly facilitated by having separate answer booklets. The obvious advantage is that this would raise levels of alertness and judgment of markers and reduce fatigue.

g) *Integrating internal and external awards.*
A rational scheme/schemes for consolidating awards for separate components under IA into a composite grade and integrating this with the end-semester examination award into the final grade needs to be evolved. At present, there are no clear formulas/guidelines. Internal assessment is carried out in several independent colleges and there is no moderation of the marks awarded. This needs immediate attention.

* One detailed illustration of such a scheme is provided in Appendix D**.**

2.4 **Instructional Practice and the Use of Technology**

VIII The RUG report has pointed to the importance of technology in teaching, where technology is not merely an add-on but can 'revolutionize' teaching especially of science and mathematics through visualization software (pp. 8-9). Indeed, the availability of technology is a boon for all subjects since it facilitates the shift from transmission by the teacher to activity, participation and self-managed study by students. The new mode or style of 'teaching' looked forward to is one in which assessment is an integral part of the teaching-learning activities, and the availability and use of technology is a factor. The term technology here includes importantly the vast academic resources made available by developments in the information sciences, not merely computers with net access. The role of libraries needs to be recognized and their facilities upgraded.

Discussion

Educational programmes in Kerala, as noted earlier, have the advantage of a strong IT base. The IT@School initiative can be extended to colleges as a practical way to provide IT support for enriching instruction at the college level. It is safe to assume that most colleges have computers in a proper computer laboratory or a small cluster, and that many students have access to computers (at home or through Internet cafes). Many of the in-class activities reviewed in the last section are greatly facilitated by technology: this section highlights some of these points.

There are three levels at which technology can be employed for teaching and assessment depending on the degree of sophistication of what is available:

a. **Standalone computers**. These computers are not connected to one another or to the Internet, often for security reasons. They have basic programs, such as word processors and a spreadsheet. These permit students to draft their papers and run simple statistical analyses for research projects, while teachers can prepare (and save) tests and collate grades. A major benefit is that teachers can provide rapid and lucid feedback on student assignments, enabling students to revise their work, and thereby supporting formative assessment.

b. **Internet connectivity.** If computers are connected to the Internet, the potential of the technology increases exponentially, because material beyond the textbook can be made the basis of tasks.

    i. Since the printed textbook is no longer the sole source of information, students can be required to access current and additional material through the Internet. Library facilities involving guidance from staff will be a factor here.

    ii. Students can incorporate audio, images, animations, etc. in their assignments, which the print medium does not permit. These new technologies are not only familiar to students, but have also become a central part of the way we 'read' information.

    iii. The variable quality of the information on the Internet can be used to teach students to question the 'truth of the written word' and impart a research orientation.

c. **Learning Management Systems (LMS) and educational software**. The university's IT department sets up these systems, provides manuals and orients teachers on how to handle them.

    i. Many universities use a Learning Management System (LMS) such as Moodle, to connect all computers in the university; the system is partitioned so that different groups can access only specific sections. One of the most secure portions relates to grades; teachers can access only their own class grades and directly input scores. Teachers can also set up sites for each class. These sites serve as an efficient repository for class material (the syllabus, readings, PowerPoint presentations, datasets, and assignments) and for exchange of material—students can upload their completed assignments and teachers can return assignments through the LMS. Quizzes can be put online and automatically scored, and a survey tool collates student feedback. Three tools—Discussion, Chat, and email—can be used for collaborative work. For instance, the teacher can select a controversial topic from the syllabus and set up a discussion thread for (say) three days. During this time, all students in the class have to send in their comments, as well as respond to another student's comments. Grades can be allotted on the quality of each student's responses. Such an activity has several advantages: all students are involved, the quality of the responses is thoughtful (since students have time to do some reading/research) and weaker students get the necessary time to think through their answers.

    ii. Educational software is available for different disciplines. Simulations are frequently used to teach subjects such as economics, physics and geography. In terms of assessment, multimedia capabilities call for teachers to think beyond conventional paper-and-pencil tasks. For instance, students can use the simulation software to answer a set of questions. Other possibilities include quizzes that incorporate 'hotspots' ("Click on the correct section in the image below") and decision trees.

Facilities for audio/video recording, rapid printing or photocopying to obtain multiple sets can also be used to go beyond teaching based on "chalk and talk". Tests of manipulative skills and student presentations can be video-taped for follow-up teaching and documentation purposes.

All this leads to instruction that is more flexible and relevant to current concerns including workplace requirements, apart from being participatory

Teacher Capabilities

Using technology for assessment involves two aspects: **technical** and **academic.** On the technical side, teachers need a certain level of familiarity and comfort using the tools, but some tasks require the expertise of the IT department.

The academic component is more complex because technology cannot be a mere 'add-on' to existing practices of teaching and assessment—transformation is called for. While teachers will have to take the lead in using technology for change, the possibilities relating to different disciplines need to be discussed and shared. The prerequisite is basic computer literacy to the extent that teachers can perform the necessary operations described above (minus the programming); they have to be able to upload and download files, open them and edit them. At the next level, teachers engage with using technology to alter existing practices. This means going beyond familiarity and comfort levels to exploiting technology purposefully. An obvious instance is encouraging students to use technology (word processors, computer programs, the Internet, and multimedia) for their assignments.

To address these two levels, extensive workshops are required to train teachers on using **subject-specific** software, orienting them to the purposes of different levels of tests, and designing technology-driven tests.

Issues in Using Technology

This access to technology in testing raises the issue of plagiarism and 'buying assignments' from better students or shops. Mechanisms, such as SCAM software and cross-checking on the Internet, are available. Teachers can plan assignments keeping students limitations in mind, and can use in-class quizzes to address these problems. At the same time, students should be made aware of the implications and consequences of plagiarism. Both rewards for initiative and and punishment for misuse of technology should be put in place. Students could be asked to sign a non-plagiarism statement for each assignment/project/dissertation.

2.5 *Challenges and Opportunities presented by new types of courses.*

IX The new curriculum introduces foundation courses and proposes interdisciplinary studies. These are new and do not 'belong' to any one department; hence, they provide the opportunity to break new ground since no *tradition* has to be preserved. For foundation courses, especially, innovations in assessment can be explored since the competitive framework can be de-emphasized. Collaborative tasks can be made a major component of such courses. This could be valued as an opportunity to support the goal of learning to live together in the academic sphere and not only through cultural activities. The courses should encourage students to apply and extend the principles to their own disciplines, which would help them see the relevance of the courses to their academic and future lives. The development of

syllabi in the elaborated form requires collaboration *across departments*. Teachers with relevant skills need to be found, and means for collaboration evolved.

Discussion

Core courses. The foundation courses, namely, academic writing, academic presentations, critical thinking and culture, are intended to provide opportunities for 'learning to learn' and develop capabilities that are not tied to a specific disciplinary area. It is tempting to allot these courses to teachers from the disciplinary areas of English, Philosophy, and Culture, but this would reduce the courses to formulaic courses in précis writing, spoken English, deductive/inductive logic, and history. Such courses already exist in several university syllabi, but student motivation has been a problem. The reason can be traced to the design of these courses: they teach and test a fixed body of information, and students cannot see how they are in any way different from their other content courses. The courses are intended to equip students to extend their learning to their content subjects and their future workplace by teaching the skills of communication, argumentation, and enquiry. Course descriptions need to communicate these aims effectively to students.

For their content subjects, students need to learn the skills of academic reading and writing. In reading, the variety of material on the Internet is a resource for students to gather and evaluate the quality of information, helping to develop critical reading skills. Further, extended library resources and the Internet should be used to enable students to gather content that they can critically evaluate, critique and synthesize. For writing, students should use a word processor, which will automatically raise the quality of the written assignments. Since students may be unaware of the genre of academic writing, explicit instruction is required. Ideally, the assignments should be linked to assignments in their content subjects, thus providing students with a 'tutorial' service.

If a Learning Management System, such as Moodle, is used a Discussion Forum or Chat can be set up to enhance written communication. Some of the pragmatics of communication get transferred from the written to the spoken medium. Student responses can be graded for internal assessment in terms of participation and quality of the contribution.

Assessment would have to focus on the acquisition of skills in research, communication, and reasoning in the student's disciplinary area. Hence, assessment has to be based on short research papers, formal presentations, and critiques instead of a formal written examination on pre-defined content.

This has two ramifications for teaching and teachers. (a) Teachers have to become comfortable handling material in other disciplinary areas and learn to assess skills rather than content and (b) Technology becomes critical, as students will have to use the Internet for research and computers as a productivity-enhancement tool for academic work including desk-top publishing, communication, etc.

These courses are compulsory because of their importance for the student's learning in all areas. The challenge for course designers is to create and teach courses that teach meta-skills across disciplines, and help students see their relevance thus generating intrinsic motivation. The assessment scheme should be learner-friendly and encourage full participation. One way of doing this to place them in the Pass/Fail category with no grade assigned.

Interdisciplinary studies. The introduction of interdisciplinary courses has ramifications not merely for teaching but also for assessment. The purpose of interdisciplinary studies is not only to allow students from one discipline to acquire knowledge/skills in another discipline but also to apply it to their disciplinary area. This has ramifications for teachers, who will have to broaden their

areas of reading beyond their specializations. The question about who (which department) is qualified to assess students for such a paper will arise. Procedures for teachers to collaborate in teaching and to design schemes for interdisciplinary assessment will have to be evolved. The importance of clear learning goals that are understood and accepted by teachers and students is highlighted again.

2.6 *Proceeding with Caution*

X   Experimentation. As noted earlier, the affiliating university-based examination system has a high level of rigidity in terms of centrally authorized procedures along with resistance to change. Even minor modifications are difficult to implement because uniformity across faculties, departments, centres and colleges is a non-negotiable constraint. Many proposed new procedures that are already established in other settings are viewed — perhaps rightly—with scepticism and distrust: their feasibility and effectiveness are not known, and they might lead to unfairness. A responsible and practical strategy would be to try certain promising new procedures on an experimental basis in a few specific settings: in a single department, college or cluster, covering a single paper. If an innovation is found to work satisfactorily *and* this is communicated to the academic community, acceptance would be easier. This would help institutionalize the new practice.

Given that new approaches to the curriculum need to be supported by substantial changes in assessment practice, the fact that potentially useful models (with supporting know-how and technology) are available but remain unused is a lost opportunity to enhance quality. Experimentation as a move to lay the ground for more systemic reforms is thus urgently needed, and administrative and financial support should be provided. It should be seen as planned institutional strategy and not the casual allowing of freedom to some individuals or departments. Proper planning and guidance are crucial, and also the availability of a forum where reports can be presented.

2.7   *Preserving the integrity of the system*

IX   Formal public education is associated with the examination-based certification of individuals. Largely because of the competitive setting which places them in the high-stakes category, the integrity of the entire process leading to the award of marks/grades with their unassailable permanence is of the highest concern. Measures to avoid leakage of question papers, cheating in examinations, errors and malpractices in scoring, and tabulation of mark sheets should remain a priority at the level of the CoE.

Discussion

Copying from others in the examination hall is a long-standing problem, aggravated in some measure by short-answer and objective-type items. Universities need to experiment into newer ways of handling the menace of malpractices in examinations. A facility such as the question bank makes

it possible to generate *equivalent tests* (with either altogether different but equivalent questions or questions which are rephrased, re ordered and provided with unique numerical or other datasets for problems), which makes copying more difficult. In-camera examination halls should be experimented with to deal with other forms of cheating and indiscipline in the hall. It is possible to record the examination procedure in digital video at an affordable cost. The in-camera monitoring can be extended to the entire process of handling materials from the point of opening question paper packets to distribution to examination halls and the packing of answer scripts.

X   With the provision for internal assessment as a formal component of the examination, the integrity of the procedures at the college level need to be subject to similar vigilance. The removal of secrecy relating to student and teacher/examiner identity has made it essential to ensure transparency and safeguards against bias. The submission of assignments prepared with outside help and plagiarism are new problems. Engaging constructively with these college-level issues will have to be based on openness, education/counseling, dialogue, and trust-building. The type of policing done at the secrecy and blind scoring-based public examination is neither relevant nor feasible here. Teachers need to be involved in the processes developed at the college level, as the role of principals and heads of departments, though important, is limited.

Discussion
All teachers are examiners in the setting of internal assessment. This brings to the college the responsibility for maintaining high standards of professional conduct of teachers and students. It is advisable to take a scientific approach to handling cheating/plagiarism. Warning and punishment should not be the only means. All students may be asked to take part in compulsory pre-exam counseling (possibly based on a professionally prepared digital video). An anonymous telephone counseling facility should also be opened by all universities.

XI   There is better appreciation now that examination-related anxiety and stress, which appears to be increasing, is partly the result of the features of the system which is experienced as irrational and unhelpful, and not only a sign of the psychological 'weakness' of individuals. The conventional scope of student welfare provisions needs to be extended to include a dedicated counseling facility to help students in this area.
Discussion

The activities of a counseling service could include education about cheating, plagiarism, proper study habits and such matters, and assistance with developing support networks. It is important to identify examination anxiety (or performance anxiety in general) without waiting for some episode or crisis. Students could be given a questionnaire to see if they exhibit symptoms of such anxiety-related problems, and special attention given to those who seem to need it. Advice on how to scientifically manage tension is an example. The Physical Education departments of universities represent one resource that could be drawn upon to play an active role. Voluntary agencies with relevant experience and resources could be enlisted. It is important for authorities – at both the university and college levels – to be seen as proactive and supportive in this sphere.

XII   Examination results form a vast and potentially rich store of empirical data, Research on examination procedures and broader research on higher education using student performance data is an accessible means of fostering ongoing development towards higher quality. All data is computerized and access without compromising confidentiality is possible; packages for various types of analysis are readily available. The analysis of such data (subsets) can throw light on various aspects of the evaluation process, and patterns of learning across student categories and across subject areas. Technical findings can lead to more scientific procedures being adopted. Findings relating to students' performance patterns should inform curriculum review exercises by academic boards.

Discussion

Statistical analysis of examination data is generally limited to routine statistics covering enrolment, pass percentage, distribution across classes, with means and standard deviations. More focused studies could cover points such as varying success profiles across external and internal, essay-type and objective-type, written and oral, with and without time limits, timed vs. non-timed, and main and supplementary examinations. Information relevant to various questions about patterns of achievement of different categories of students, and patterns for different disciplines and also of specific papers within a subject can be generated. Academic bodies – general like the Academic Council and specialized like boards of studies – should be interested in such empirical findings and should pose questions to be studied. Information relevant to revisions of syllabus and examination schemes would be generated.

Departments of Education which do conduct research focus mainly on the school stage. They should be encouraged to bring higher education within their ambit. The short-lived initiative relating to the Master of College Teaching (MCT) degree at Calicut University is a useful point of reference while reconsidering the scope of work of these departments. Other social science departments also could be encouraged to study aspects of tertiary education Students in these disciplines could be offered access to data available in CoE records, if they formulate relevant research projects. A special research cell to analyze examination data on a regular basis could also be set up.

XIII   Innovations and explorations

The vision statement of the RUE report mentions "ambitious, exciting and challenging transformations" and the report has many novel proposals, especially foundation and interdisciplinary courses lying outside conventional subject/department linked boundaries. The teaching of such new courses has both the advantage of not having an established tradition to follow, and the disadvantage of being prone to being severely constrained by formal examination rules. The hoped-for more creative conceptions of these (and older) courses would involve suggesting new abilities as goals. These would have to be explored and created as they do not exist in finished form in any inventory. Positive support for innovations in teaching and assessment proposed in a well thought out manner by teams of instructors would be a valuable way to further the reforms already underway. Conventional

examinations have long been a drag on education. Bold moves to exploit the potential of assessment technologies to improve educational quality by opening new windows on the processes of learning are possible.

Part III   Recommendations

Provision of a syllabus-based framework for improved assessment practice

1. A suitable template with guidelines relating to the scope and structure of the syllabus statement of each separate course should be prepared and its use made mandatory by the university. The syllabus statement for each course (issued by the relevant Board) should include a detailed note on the recommended assessment scheme, especially the internal component.

2. a) The duties and responsibilities of Boards of Studies in each area should be amended to include a definite provision for syllabus preparation in keeping with the guidelines and regular reviews.
   b) Administrative and financial provision should be made for workshop-type sessions for syllabus development, with the option of including qualified resource persons as special invitees. Manuals and library resources and secretarial assistance should be available at the workshop venues. Final committee-mode decision making (if needed) must be based on workshop output.

3. Members of Boards should be given orientation/training relating to curriculum design and educational technology. A permanent facility for this purpose should be set up by the university.

Upgrading the technical support and personnel resources at the college level

4. All teachers need to be given training in the areas of assessment and educational technology. A long-term strategy for training teachers in assessment with a special focus on the internal/ in-term component should be developed and implemented using both face-to-face and distance modes. The specific needs of different subject areas should be recognized and addressed. The relevant boards should be associated with the overall planning of these programmes. The process needs to be envisioned as becoming self-supporting over time.

5. College departments should maintain an up-to-date reference file relating to assessment rules and guidelines. The approved schemes for Internal Assessment of various departments should be available to students in a clear form. The facility for dealing with difficulties/ grievances relating to IA should be accessible to students.

6. College libraries should have a collection of manuals and reference books, CDs on assessment, curriculum, and educational technology for the use of teachers. Subject-wise collections of question papers and IA tasks (along with notes, critical comments) should also be obtained, and made accessible to teachers.

Improving the external final examination

7 Boards should undertake a review of models and recent question papers, giving priority to compulsory courses. Useful improvements can be made without waiting for the training workshops to achieve wide coverage. A plan to review all question papers over the next several months should be prepared by each department
Reports on this exercise should be required by the Academic Council.

8 Variations in the design and physical structure of questions papers (and answer booklets) should be tried out. These may include: separate sections for objective-type questions, short answer and essay questions, restricted response space to encourage precision, timed sections, and flip-reduced answer sheets.

9 Paper setting by teams through modularized setting and section-wise marking by markers in teams should be introduced in a phased manner.

10 Small-scale and experimental question banks should be set up in selected departments for selected courses. A task force to plan a centralized question bank (with a state level component and a separate components for individual universities may be set up.

11 Measures to maintain the integrity of the system should be reviewed and extended at the CoE level. These may include: parallel versions of question papers; conducting examinations in-camera; video-recording of opening packets of question papers; and packing of answer books. Video recording of viva voce examinations should be considered and initiated in a phased manner.
Bar-coding of answer books and response sheets should be taken up. Delivery of question papers in electronic mode for printing at local centres on the day of the examination should be explored.

12 A clear policy for dealing with unfair practices relating to Internal Assessment should be evolved and put in place at the college level. Prevention through ensuring transparency in grading, attending to convenience aspects, and education regarding plagiarism should also be attended to.

13 Under the head of student welfare, a component specifically concerned with examination-related issues (especially stress and anxiety) should be established. Accessibility to students should be a priority for counseling activities. Support from the community including student volunteers could be canvassed.

14. A scheme to support innovation and experimentation in the area of assessment at various levels, administratively and financially, should be formulated. Potential awardees should be reached through vigorous publicity. Support of an academic nature through accessible resource person/institution should also be provided. The presentation of reports at a suitable forum should be a requirement. The implications of findings from such experiments for improving assessment practice on a wider scale should be noted and acted upon.

15. Research on various aspects of examinations should be taken up at each university and at selected colleges, according to an overall plan developed through consultation to avoid duplication. The departments of Education should take the lead. Research scholars in the social sciences could be encouraged to participate by offering access to databases in examination branches.

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Appendix A: A Descriptive Model of Examinations in Public Education

Assessment of progress towards goals is a necessary aspect of any purposeful social enterprise. Education in the sense of planned instruction needs to have a built-in evaluation component. A principled approach to evaluation would emphasize the need to review both the effectiveness of the system delivering instruction and the putative success/progress of the individual learner. The *achievement test* more popularly known as the *examination* is concerned only with the latter, the appropriateness (validity) of the curriculum being taken for granted.

The familiar routine of monthly tests, semester and annual examinations at the individual school or college level represents the fairly normal working of achievement. When the *external public* examination becomes the vehicle, a number of transformations (in effect, distortions) of this pedagogically sound element in the educational process occur. *Tertiary-level education which is predominantly through affiliating universities is virtually defined by the external examination pattern.* Examinations in public education have certain characteristics that need to be analyzed further. The discussion needs to cover their purposes, mode of operation for conducting individualized assessment (despite massive numbers), and the interplay between parallel subsystems (academic and administrative).

1. Purposes served

Examinations in formal education serve the primary function of providing dependable evidence for *certifying* – in a publicly accepted manner – the progress of a student towards learning objectives. The certification relates to the extent the individual student meets laid-down requirements for a degree or equivalent award. This procedure brings the assessment of a student by her/his the teacher (the essence of achievement testing) into an *externally controlled* mould. The principle of consistency requires that the same evaluation scheme is applied to all individuals. The imposition of a common examination across hundreds of centers (colleges) entails a significant loss of sensitivity to local conditions and flexibility in a more general sense.

In the setting of the affiliating university structure, the external university examinations also serve a further important function —that of *external* inspection/audit for the maintenance of standards over a constituency of individual colleges. The variation that would occur across local colleges is controlled (flattened out) by the authoritative single examination. It is pertinent to note that the external examination pattern was *the* only one followed in school- and college-level public education at the time of independence and it remains the massively dominant one even today. The virtues of *internal evaluation* have been extolled widely, but actual movement in this direction has been quite slow, if at all. Administrative control is seen to perform the quality control function.

The value that public certification carries in terms of careers and social advancement makes public examinations a high-stakes mechanism for all. The resulting psychological pressure on students is well known. The intense obsession with *fairness* in a setting of inter-individual competition results

in rigidity of testing procedures. This is *highly valued by stakeholders*. The pre-set standards-oriented evaluation function of university examinations is thus marked by *externality* from the college (where teaching-learning actually takes place) and by *rigidity*. There is a striking contrast between this orientation and the central idiom of *education,* which is replete with notions such as inquiry, agency, autonomy, flexibility, and experimentation. This dissonance appears to be one major source of the negative press of 'examinations' on 'education'.

Examinations in India have another highly visible and socially important form, namely, the *competitive examination*. Given the social and economic setting in which there are always massively more candidates for jobs and seats in preferred/prestigious courses or institutions than there are vacancies, these examinations perform a selection/rejection function. The numbers are such that for about 95% (even more) of the candidate groups/batches for these examinations, the result of *rejection is inevitable*. Such savage selection ratios are not usually reported in other countries with a well-developed post-secondary education system. Board and university examinations are *not designed* for such filtering, but they are often *used for this purpose also*. The high level of tension and distortion of values and behaviour resulting from the dire need to get ahead of one's fellows in the competitive examination setting thus *generalizes to all examinations*. They seem to fall naturally into a very high-stakes sector— with well-known consequences.

This is not a new or surprising observation. Its relevance to the present discussion lies in the fact that the tension-ridden fairness-competition dominated perspective intensifies the pressure to *keep 'pre-existing' examination patterns stable and safe*. Ways of coping and surviving that have been perfected over the years will become dysfunctional if the quality of examinations is suddenly raised. This source of resistance to change is a major element in the present setting. Its origins in social conditions and inadequate facilities that disadvantage many students and foster a sense of desperation need to be recognized in a sympathetic manner, even as the striving to raise educational standards goes on.

a) Functions of the administrative machinery

The assessment of a student's progress through an achievement test is necessarily an individualized process: each student has to be assessed separately. This fundamental principle and empirical fact is obscured by the overwhelming dominance of the factor of large numbers – thousands, even lakhs (at the school level) – of students covered in a *single time-tabled examination session* or sitting.

A critical feature of public examinations is that the core cycle of individualized testing has to be activated and followed through in parallel tracks *for each one* of a given batch of students dispersed over a large number of local centers (typically colleges). The rule applies to *each paper* (examination in the time table) separately. The millions of answer scripts with a unique tag (roll number) that need to be processed represents this dimension. The actual test administration session for each paper has to be *simultaneous* across all centers. This is one major aspect of the complexity of the operations that the Controller of Examinations (CoE) has to handle. A further phase even more demanding in terms of co-ordination follows, which has to do with the scoring of each individual answer script by relevant subject-linked valuers/ scorers who are of necessity located at different places, and then collating these separate awards for each individual into a single composite mark/grade sheet.

In both phases, confidentiality and security on the one hand and a tight time schedule on the other are major conditions. It is easy to see how complex the machinery operated by the Controller of Examinations has to be. It is also important to understand and appreciate that an extremely high level of rigidity/faithfulness in implementing laid-down procedures is *fundamental to the integrity of the system and altogether unavoidable*. A misplaced concern for human factors leading to the

tolerance of or promotion of unprincipled flexibility in this sphere can only have disastrous consequences.

A review of observations and recommendations relating to examination reform over the past half-century or more indicates that most of the specific and concretely spelt-out measures relate to this administrative system or 'machinery' needed to conduct public examinations on a large scale. These deal with general rules/procedures applied across faculties and disciplines and lie in the territory of the CoE. The focus is on increasing user friendliness and efficiency. Progress in this area, though by no means uniform across states or universities, has on the whole been substantial. The steady extension of computerization over the components of the examination machinery is one significant indication of such progress.

b) The complementary roles of the administrative machinery and academic bodies

The activities sketched out in the previous section relate to the organization and logistics of conducting large-scale examinations. It may be regarded essentially as a delivery system, with a primary commitment to security/confidentiality and efficiency (demanded by time constraints) in dealing with the matter *handed to it* by an *autonomous client (s)* —the academic body(ies) that envision and formulate learning objectives and substantive means of assessment. The crucial *academic component* of achievement tests, namely, the test (question paper) and the criteria for assessing/scoring answer scripts for the different subjects belongs to a *separate parallel system* represented here by the relevant Board of Studies. This system (actually several parallel and autonomous subsystems) interfaces or collaborates with the administrative machinery in conducting examinations. It is important to note that there is no control exercised by the latter. The CoE imposes certain time schedules for the preparation of tests/ question papers and for the scoring of scripts by subject specialists: nothing more. *No aspect* of the substantial academic content of assessment in any subject/ discipline comes under the purview of the CoE. The machinery is meant to ensure that the right test —as created and vetted by the relevant academic body—reaches the right set of students at the right time, and that each script goes to an appropriate valuer.

This point relating to two independent subsystems is crucial for understanding the main determinants of the *quality of assessment* —which is accepted as the key issue in examination reform. The activities with the most direct bearing on this aspect of quality as noted above are under the control of the BoS for *each* subject area. This means that around fifty such bodies have to function *separately and independently* with a high degree of competence and responsibility. This is a largely hidden process that is not controlled by any central authority. These bodies are answerable to the Academic Council or Senate in some indirect sense but their academic autonomy respecting the uniqueness of scholarly disciplines is a valued principle. While this is an important position to maintain, the resulting detachment of these bodies from routine and practical matters is a problem in that the subject-related academic guidance needed for maintaining the quality of 'teaching and testing' is not forthcoming. It is quite clear that their style of activity (agenda, frequency of meeting, etc.) does not match the regular cycle of university examinations which involve the creation of a *fresh* set of examinations each year/ semester. The machinery operated by the CoE should and does function in keeping with the universities' calendar for admissions and examinations. The concerned academic bodies need to move towards this mode of functioning. Their typical engagement which rarely goes beyond the occasional issue of a model paper with little or no clarification needs to be upgraded.

The long-standing powerful critique of the *quality of assessment* must therefore be directed to the **separate and independently functioning** statutory academic boards that are responsible for specifying and monitoring the academic basis of assessment. If question papers of today are not significantly different from the corresponding ones of thirty or fifty years ago, it is a telling

reflection of the fact that the syllabi and objectives for subjects have hardly changed beyond the addition of a few topics/ subtopics. Where new ground has been broken in syllabus formulation this has not been followed up by serious consideration of the needed changes in assessment. This inertia rather than active or conscious resistance to change lies primarily in the structure and manner of functioning of the (parallel) academic bodies that formulate syllabi and the scope of evaluation. At the same time there are variations across disciplinary areas. It needs to be recognized that different departments have made progress towards supporting examination reform to different degrees. Structural or systemic factors *have not crippled* the entire academic domain, which indicates that local energy and initiative have a role to play. There is a case for locating 'good practices' in this domain and sharing them across faculties/departments to provide models to learn from. In the setting of reviews and discussion directly oriented to examination reform, it is noteworthy that recommendations over the years in the core academic area —applicable to subjects areas separately/independently —have been vague, and more by way of exhortation than the identification and clarification of specific steps. The indication is that the proceedings of meetings (conferences, seminars, etc.) avowedly dealing with *examination* reform are (of necessity) general in their focus and scope. The action-oriented *output* does not 'reach' the various particular boards or equivalent subject-specific academic bodies. This seems due largely to the fact that there *no built-in mechanism* for these bodies to engage with issues related to examination quality on their own in a pro-active manner.

It seems clear that strengthening the academic (subject related) input into student assessment by revitalizing the functioning of the relevant statutory bodies has to be a major thrust in examination reform.

Appendix B1: Programme and Course Design

1. Current syllabi

Currently, university course syllabi merely provide a list of topics. Such a list provides little clarity for students, and no direction for teaching or testing. Learning outcomes need to be articulated at both the programme and course levels.

Example from Psychology
Course 001: Orientation to Psychology

Unit 1: **Introduction to Psychology:** A Science and a Perspective; Origins and Developments in the discipline; Methods: Experimentation and Case Study

Unit 2: **Biological Approach:** The Physiological System: Neurons, Nervous System: Interaction of Mind and Body; Hereditary bases of behaviour.

Unit 3: **Cognitive Approach:** Perspectives on Consciousness, Perception, Learning, Memory, and Problem solving.

Unit 4: **Developmental** Approach: Methods and Issues in the study of Development; Cognitive Personality and Social Development: Contributions of Piaget, Erikson, KohIberg and Vygotsky.

Unit 5: **Socio-cultural Approach:** Socialization; Understanding self and others; Culture. Self and Society.

2. *Learning Outcomes for Programmes*

At the programme level, learning outcomes are stated in general terms. Below is a short version of the learning outcomes for an undergraduate program in psychology from the American Psychological Association (APA). Note the following:
- Only Item 1 deals with content and that too in a generic way that allows for updates.
- Items 2 – 4 expect students to apply their knowledge to real-world scenarios.
- Items 5-10 emphasize professional development

Undergraduate Program: Learning Outcomes for Psychology Majors

1. Theory and Content of Psychology
   - Demonstrate familiarity with major concepts, theoretical perspectives, empirical findings, and historical trends.
2. Research Methods in Psychology
   - Understand and apply basic research methods, including research design, data analysis, and interpretation.
3. Critical Thinking Skills in Psychology
   - Respect and use critical and creative thinking, skeptical inquiry, and the scientific approach.
4. Application of Psychology
   - Understand and apply psychological principles to personal, social, and organizational issues.
5. Values in Psychology
   - Weigh evidence, tolerate ambiguity, act ethically, and reflect other values underpinning psychology.
6. Information and Technological Literacy
   - Demonstrate information competence and the ability to use computers and other technology for many purposes.
7. Communication Skills
   - Communicate effectively in both oral and written formats.
8. Sociocultural and International Awareness
   - Recognize, understand, and respect the complexity of sociocultural and international diversity.
9. Personal Development
   - Show insight into one's own and others' behavior and mental processes and apply effective strategies for self-management and self-improvement.
10. Career Planning and Development
    - Emerge from the major with realistic ideas about how to use psychological knowledge, skills, and values in various occupations and in graduate or professional school.

3. Course-level outcomes

Below are sample learning outcomes from different disciplines

History (American Historical Association)

- Demonstrate the capacity to deal with differences in interpretation

- Demonstrate an ability to recognize and interpret multiple forms of evidence (visual, oral, statistical, artifacts from material culture)
- Recognize the distinction between primary and secondary sources, understand how each are used to make historical claims

Chemistry

- An understanding of major concepts, theoretical principles and experimental findings in chemistry.
- An ability to solve problems in an efficient and accurate manner.
- An ability to employ critical thinking and hypothesis-driven methods of scientific inquiry.
- A working knowledge of basic research methodologies, data analysis and interpretation.

Humanities

- By the end of their second year, students can, on a final exam, describe and explain literary and cultural theories of English literature.
- In a term paper, students will be able to gather and explain the history of philosophy, including both major themes and movements and some specific figures and systems.
- Students will, on an essay exam, be able to analyze philosophical texts.
- During a final exam, students will be able to distinguish between valid and invalid philosophical arguments.
- Students will, on an exit exam, be able to compare and contrast interpretive theories of religious studies.
- Graduate students, on a term paper, will be able to create an original argument and defend it using relevant evidence.

Fine Arts
- First-year student majors can identify, on a final exam, the title, artist, and period of major works of art.
- Students can, with a term paper, analyze compositions that represent the main styles of 18th and 19th century European art music.
- On a final exam, third-year students can gather and synthesize information about the religious, political, moral, and cultural contexts in which major works were created.

Science
- By the end of their first year, biology majors can describe, both orally and in writing, Darwin's theory of evolution and natural selection, and provide an example of this process in the animal world.
- Students can describe the molecular structure, stereochemistry, physical properties, and reactions to metallic and main-group element compounds orally and in writing.
- During an exam, students can complete a genetic disorder analysis by the end of their third year in the major.
- During a final exam, students can provide examples of quantitative relationships describing physical states, and solve problems requiring the use of such relationships.
- Students can, in a final project, write clear and convincing essays that apply their knowledge of chemistry to science problems and public concerns.

Social Science
- During an exit exam, graduating majors will be able to outline the general theoretical and epistemological issues of relevance to anthropologists in the areas of society, culture, and history.

- All graduating students will, on a final exam, apply economic theory effectively to a simulation exercise.
- Fourth-year sociology majors can, on a final exam, evaluate the contributions of the main theoretical traditions, and can provide examples of their application to contemporary sociological literature.
- All undergraduate psychology majors can, on a research project, conduct literature reviews that critically evaluate the research on a particular topic.

4. Course Description

Course descriptions provide students with a clear idea of assignments and grading criteria. Below is a sample course description for a course in Academic Writing.

Academic Writing 1

Contact information: Instructor name, Office, email and course website

Course Description

This is the first course in a 4-part sequence on academic writing at the university. In this course, you will begin to learn how to write texts in English for an academic audience.

During the course, you will write short essays on different topics. In the first month, you will write on general and familiar topics--people, places, and things—so that you become used to writing without worrying about grammar.

After that, we will work on the following:

1. **Organization of the essay**
   - Introduction, body, and conclusion
   - Topic sentences and supporting details
   - Patterns of organization: Description, Comparison/contrast, Procedures
   - Transition signals, such as *in addition*, *in contrast*, and *first/next*.

2. **Writing Drafts:** An essay is not written in one shot but is polished in different stages. After you write your first draft, you will check it for grammatical and spelling errors. In each class, we will work on common grammatical errors to help you find these problems in your essays. Your classmates will also help you identify problems in your writing.

Assignments

You will write several short 1-page essays and revise them during the course.

The final assignment is a 2-page essay (double-spaced) on a topic in your discipline that includes a diagram and at least two references.

Grading

To get credit for this course, you must complete all the written assignments.

- Grade C: If you complete all the written assignments.
- Grade B: If you revise your drafts based on my suggestions.

- Grade A: You must show consistent effort and improvement in your written assignments.

5. Teaching and Assessment Plan

Below is a plan for the teacher, and is not necessarily made available to students. For the course above, it shows how assignments can be structured and graded.

Academic Writing 1
Objectives
- Students begin learning some conventions of academic writing.
- The emphasis is on organization and not length. The average length of an assignment is one page, double-spaced.
- Students learn to revise their papers (two drafts were required for each assignment).

Assignment 1: Writing about people
The students work in pairs/groups to write short essays about family, a classmate, or a person they admire. The objective is fluency (not graded).

Assignment 2: Writing about places
Each student writes a short essay on his/her hometown. The students are encouraged to find the content and pictures on the web, since the focus is not on content but on fluency (not graded, but feedback given).

Assignment 3: Describing Objects
The assignment is: "Your friend wants to buy a present for his father. Choose a product and write a page describing its specifications and functions."
The objective is to introduce academic writing conventions: to organize information in paragraphs, to write a short introduction, to understand the difference between topic sentences and supporting details, and to label figures.

Assignment 4: Comparing Objects
This assignment is an extension of the previous assignment on a single product. Students identify two products on the Internet, compare them, and recommend one product.
The primary objective is to learn the structure of a comparison/contrast essay along with associated language (*on the other hand, also, moreover, whereas*). Other objectives include learning the structure of an introduction, avoiding the use of 'I', labeling a table, and including a bibliography.

Assignment 5: Procedure
The assignment is: "The Computer Center plans to update the computer manual for UNIX. Select a short procedure (4-5 steps) and write out the steps for the user. The instructor will follow your instructions on her computer to see that they are explicit."
The primary objective is to learn how to write a procedure along with the associated language (first, next) and to recognize the importance of explicit instructions.

Appendix B2. Course Descriptions from a Workshop in Kerala

Course descriptions provide students with a clear idea of assignments and grading criteria. Below are sample course descriptions (still in the process of development) from different disciplines developed by teachers at workshops organized by KSHEC.

Course: Fiber Optic Technology　　　**Program: BSc (Physics)**

Course Designers: Sheenu Thomas, N Gopakumar, C M Lily

Course Overview

Modern high capacity telecommunication networks based on optical fiber technology have now become an integral and indispensable part of the society. Fiber Optic communication has been growing at a phenomenal pace over the past few decades and its impact is increasingly felt in nearly all aspects of telecommunication technology. Fiber Optics has metamorphosed into a strong commercial reality. This demand for transmission over the global telecommunication network will continue to grow at an exponential rate and only fiber optics will be able to meet the challenges. With all the pervading applications of optical fibers in information transfer and sensor technology, it is important to introduce this subject in graduate level so as to expose the students to the recent advances of this exciting field. The course deals with the basic theory and applications of fiber optics, logically providing a comprehensive knowledge base in communication technology. It also explains the theory of light propagation and discusses the advantages and limitations of fiber optic technology. In addition, fiber optic components, signal transmission, connection and fiber optic troubleshooting will be studied.

Our mission is to provide students with the hands-on knowledge and ability to identify fiber types, recognize various connectors in fiber systems. This program explores the history and future of fiber optics, providing the necessary background to understand the fundamentals of fiber optic systems and their individual components including fibers, cable construction, connectors, and splices. It also provides knowledge in application areas like fiber optic sensing technology, fiber optic communication link etc.

Learning Outcomes/Competencies: At the end of the course the student should be able to
1. Understand the history and operation of fiber optics.
2. Understand different optical fibers and their uses.
3. Characterize single mode, multi-mode and graded index fibers.
4. Describe the loss mechanisms and attenuation of optical fibers.
5. Explain the operation and working of a variety of splices and connectors.
6. Explain the operation and applications of fiber optic components including lenses, polarizers, prisms, analyzers, modulators.
7. Explain how to measure the numerical aperture, core diameter, losses, attenuation and dispersion occurring in optical fiber.
8. Explain how to troubleshoot the optical fiber communication link using OTDR and eye patterns.
9. Explain the functioning of optical fiber sensors that use amplitude, phase, frequency and polarization type modulation schemes.
10. Determine the performance of a given fiber optic device.

Assessment:

Internal Assessment:　　　25%

Mid-semester Test:	10%
Project:	10%
Attendance:	5%
External Assessment:	75%

Course: Social Behavior   **Program**: BA (Psychology)
Course designers: S. Vinod Kumar and Shiju Joseph
Overview: The complex nature of our social interactions makes human beings a unique animal. The development of the social mind is considered to be the cornerstone in the evolutionary history of primates. The ability to understand the minds of others, and for that matter, to understand oneself, gives us the ability to navigate our social world. The course aims to impart knowledge on how we understand others and the skills to influence the cognition and behavior of others for positive outcomes.

The course follows three courses in basic psychological processes in the first three semesters of the undergraduate program in Psychology. Since the students can now explain the basic principles and processes of human behavior, this course focuses on behavior in the social setting. The behavior in the presence of other persons forms the core of social psychology. Besides the basics of social psychology, the course gives special emphasis to issues and concerns of the Indian society, in which interventions based on the principles of social psychology, are adopted. The course enables the student to understand and explain behavior in the social setting.

Learning Outcomes/Competencies: At the end of the course the student should be able to:
1. Analyze and use non-verbal communication effectively.
2. Explain the process of attribution in people.
3. Determine the various means of impression management.
4. Detect common errors in social cognition.
5. Determine how attitude and behavior are connected in social situations.
6. Design action plans for countering the effects of prejudice and discrimination.
7. Determine the factors that lead to conformity and compliance in social settings.
8. Create training programs to resist the effects of destructive obedience.

Assessment

Internal Assessment:	25%
Case study with classroom presentation	10%
Mid semester class test	10%
Attendance	5%
External Assessment:	75%

Course Title: Basic concepts in Organic chemistry
Program: BSc in Chemistry
Course Designers: K.V. Dinesh Babu, Jogy Alex, J.S. Ampily
Course Overview

Like all sciences chemistry has a unique place in our pattern of understanding the universe. It is the science of molecules. But organic chemistry is something more. We need to study the molecules of nature both because they are interesting as such and their functions are important to our lives. Organic chemistry often studies life by making new molecules that give information not available from the molecules actually present in living things. The creation of new materials has given new material such as plastics, new dyes to colour our clothes, new perfumes to wear and new drugs to cure our diseases.

The course targets those students who have already undergone three courses in basic chemistry in the first three semesters of the undergraduate program in Chemistry. Since the students can now explain the basic concepts and behavior of elements, this course focuses on learning basic organic chemistry. It is highly essential to understand the concepts in organic chemistry in semester V and VI. The course content includes electronic effects in organic molecules that control most of reactions in living systems and synthesis in laboratory and industry. The concepts learned in this session can be applied in the chemistry of simple aromatic compounds. The course contains some mandatory experiments that finally equip them to apply the learned concepts. The course enables the students to learn isomerism of organic compounds using models on computers and other models. The new technologies has modified and simplified the teaching and learning of organic chemistry. The course aims that students learn these technologies at the start of organic the couse. The learning of basic concepts and its preliminary application in laboratory can motivate the students to develop new ideas, learn how it can be applied in the laboratory and then create molecules useful to society.

Learning Outcomes/Competencies: At the end of the course the student should be able to:

1. Explain the influences of electronic effects on organic reactions
2. Classify organic reactions
3. Understand methods of organic synthesis
4. Apply methods for converting organic compounds to target molecules
5. Understand stereoisomerism and its relevance in nature and medicine
6. Develop planning and laboratory skills in organic chemistry
7. Identify aromatic compounds based on Huckel's rule
8. Determine reaction mechanisms
9. Prepare space models to demonstrate an understanding of stereochemistry
10. Explain the halogen compounds, hydroxy compounds and their reactivity

Assessment

Internal Assessment:	25%
Group Laboratory Experiments:	10%
Mid semester class test:	10%
Attendance:	5%
External Assessment:	75%

Course: Organizational Behavior
Program: B.Com.
Course Designers: K.I. George, J. Gracious, and Renjitha Rajeev
Course Overview

This course is designed to give students the basic knowledge of human behavior needed to provide a more effective organizational environment. Particular emphasis will be placed on individual difference, attitude, motivation, job satisfaction, communication, leadership, stress, change, and organizational culture. Vigorous class discussions, along with group and individual projects, will provide the basis for the learning environment in the classroom

The three basic elements of the course are:

1. The behavior of individuals in organizations
2. Group behavior in organizations

3. How these behaviors affect the overall performance of organizations.

Learning Outcomes/Competencies: At the end of the course the students should be able to

1. Understand the meaning of organizational behavior, individual behavior, perception, attitude and personality traits.
2. Understand the concepts of IQ, EQ and SQ
3. Understand different theories of motivation
4. Identify the factors that can cause stress
5. Design ways to eliminate the effect of stress through case analysis and interpretations.
6. Apply the skills to handle the resistance to change in an organization.
7. Evaluate individual differences and conflicts from different perspective of individuals and groups.

Assessment

Internal assessment:	25%
Mid term Test	10%
Case Creation/Study Project	10%
Attendance	5%
External assessment	75%

Appendix B3: An Inventory of Tasks

A. Take-home Assignments

Students are required to submit written material on an assigned date; for this, they are allowed (or expected) to use resources, such as computers, the library, dictionaries and the Internet. Such assignments permit students to engage with the material in a more meaningful manner and express their opinions; they also teach and reinforce a research-oriented to the subject. The assignments can be modified to suit student levels and physical constraints. Two issues that will confront the teacher are access to resources and plagiarism.

- **Short assignments.** These ensure that students engage with the material.
    a. **Write-ups.** Students are given a small dataset and submit a 1-page analysis based on course readings. This is similar to laboratory reports. These assignments test analytical skills.
    b. **Summaries/Critiques.** Students write 1-page summaries or critiques of assigned readings. Such assignments ensure that students do the assigned reading through the semester. The summaries test comprehension skills, whereas critiques require evaluation.

- **Extended assignments.** These include case studies, mini-projects, and research papers. Depending on the discipline, they may involve reacting to course material, conducting field studies, surveys, experiments and interviews, or building a prototype. Clearly, students require adequate time (several weeks) for the preliminary work. The outcome is a **short paper** (2-5 pages double-spaced) that meets the requirements of the discipline but is appropriate for the student level. A variation is to allow students to work in groups on the research activity, but submit individual papers for grading purposes.

B. In-class activities

These activities require student preparation but are done in class. When done as a group project, they accomplish two goals: they solve the problem of large class sizes and they can be used as a teaching resource. It raises the issue of assigning grades since the group works collaboratively; however, the teacher can grade individual contributions or assign a collective grade to the group.

- **Laboratory/manipulative skills.** Certain disciplines, such as the sciences, require psychomotor skills to be tested.
- **Presentations/Seminars** can be used as a teaching resource. Topics from the course are assigned to individuals or groups of students; they take responsibility for summarizing and explaining this in 5-minute slots to the entire class. Such activities test comprehension skills but also develop students' communication skills. This does not absolve the teacher of teaching responsibilities; s/he should be prepared to step in if the presentation is unclear to the class and should also end the activity with a summary for the benefit of the class.
- **Group Discussions and Role Play**. In each class session, one student group holds a discussion in front of the class, while another student group is given responsibility for evaluating the discussion. In a variation, each student in the discussion group is assigned

a role and has to defend that position. Such discussions tap the affective domain as they require the skills of tact and diplomacy.

- **Peer Reviews of Student Submissions.** Conventionally, students get feedback only from their teachers. Involving students in reviewing assignments prepared by their peers is a useful pedagogic innovation. Students receive written comments on their papers and make revisions; the teacher assesses the quality and extent of the reviewer's comments, and the manner in which the writer responds to these observations. . Such an assignment teaches the writer about audience expectations, and alerts the reviewer to aspects of draft texts that need improvement. The teacher's assessments can stay at the level of feedback, but once an appropriate culture has been established this can be made a component of grades.

C. Tests of knowledge

These activities are closer to traditional means of assessment in which students are tested on a fixed body of knowledge in a timed test. However, innovations are possible.

- **Quizzes or short tests**. Multiple-choice or short-answer quizzes can be used to test knowledge of basic facts and even some higher-order skills, leaving affective and integrative skills to be tested in other types of tests. Such tests need to be held regularly for formative assessment and to familiarize students with test-taking. Rapid scoring and the display of results are important; these can be placed online to save class time.
- *Self assessment* can be introduced when quizzes are used regularly. This provides a good way of helping students feel friendly with tests. Once students have assessed their answers and recorded their scores, the answer key can be discussed by the teacher. This provides very specific feedback to students, and its value is enhanced if the activity is conducted rapidly and smoothly within a class session.

Note: The various devices under A, B, C comprise a toolkit for internal assessment to be drawn upon purposefully. They tap different levels of skills in the Bloom taxonomy, and can be extended to cover various sub-components of the psychomotor, cognitive and affective domains. The range of options now available allows for a planned gradation of challenge levels across the tasks in the assessment scheme. Students at different levels of ability would thus encounter layers or clusters of tasks that match their capacity.

Illustration of Assessment Types

Assessment types are illustrated with examples from a course in Psycholinguistics. Note the following:

a. Only a few assignments should be used for a course, otherwise this will overload both the students and the teacher.

b. Some assignments require use of library resources, computers, and group work. Class time can and should be used for such assignments. The teacher does not have to lecture in every class.

1. **Summaries/Critiques**

   "Choose one research study from the readings. Write a 1-page summary and critique of the study." This can be a take-home assignment.

2. **Short Paper**

"Collect five samples of slips of the tongue from news broadcasts and transcribe them. Write a 2-page paper explaining what this tells us about language production."

This requires access to a TV (to be done at home) and a computer (can be done in the computer lab in college). The advantage is that every student has unique data.

3. **Presentations/Seminars**.

"Your group will select one short topic from the course. Your group will have five minutes to explain this topic to the class. The group will receive a combined grade."

These presentations require active learning from students and give them a chance to practice their presentation skills. The teacher should be prepared to follow up the presentation with a lucid explanation for the class in case other students did not understand.

Class time can be used to allow groups to prepare their presentations.

Note that this exercise should not be used in Semester 1 when students have still not learned how to do presentations and seminars.

4. **Quizzes**.

Short 10-item quizzes can be used to test knowledge of basic facts.

1. A child says, "I goed yesterday." Which theory of language acquisition can account for this data?

   a) Behaviourism
   b) Cognitivism
   c) Interactionism

If quizzes are administered frequently, both teachers and students can monitor progress and re-visit topics as required. Further, they leave higher-order skills to be tested in other types of tests.

Quizzes also provide a countercheck on student abilities. There has to be a certain degree of correspondence between a student's score on the quiz and on a take-home assignment.

Technology is a major enabler here; if the quizzes are placed on a Learning Management System, students can answer them online, the test is automatically scored, and the results collated for the teacher.

5. **Extended examination essay**.

"Below are examples of slips of the tongue. Which examples are possible? What levels of planning are involved in each example and what does this show about language production?"

Students are familiar with this assessment type, but variations are possible. The examination could be open book, and students may have access to resources such as the Internet, databases or word processors.

Appendix C: Flip-reduced answer booklets

APPENDIX

AN ERGONOMIC DESIGN FOR EXAMINATION ANSWER BOOKLET
(Patent titled A NOVEL FORMAT OF EXAMINATION ANSWER BOOKLET has been filed with IPO - Chennai on 24/11/2009. Application number: **2883/CHE/2009**)

Patent Abstract: The present invention discloses a novel format of answer booklet for uncomplicated documentation and assessment of constructed responses of examination. The answer booklet of present invention incorporates a specific mechanism for aligning and documenting the marks and thereby reducing the possibility of errors on valuation and enabling easy recording of marks. Herein disclosed answer booklet comprises a fold back to the front cover page with a box cut opening in the front cover, plurality of intermediate leaves and a back cover page. While evaluation, the fold-back sheet of front cover page can be spread out for recording marks and is visible to the examiner irrespective of the page that the examiner is viewing. In accordance with this invention the said spreadsheet can be folded back to the original position after evaluation so that the processing of answer scripts will not suffer from any intricacy. It is therefore with the current invention the entire process of valuation is simplified and the problem faced by the conventional answer booklet has been rectified.

Answer books are usually designed with a (i) front cover page, (ii) front inside cover page, (iii) back inside cover page and (iv) back cover page. The front cover page is usually for documenting student identity and examination details and the front inside cover is left intentionally blank (to enable selective tearing of the cover page for false numbering). The back inside cover page and back cover page are generally used as writing sheets.

The ergonomics of an answer book has not been considered in minute details so far, even though the answer book has a very crucial role in the education process as the gradation of students is based on the reading of thousands of answer books by examiners. It is not uncommon that examiners go through hundreds of answer books and record dozens of divisions and sub-divisions of questions. The question divisions and subdivisions and also the maximum marks for each division/sub-division and awarded marks are all numbers and come into play in the mind of the examiner at any point of time while reading answer books. This is a big cause for mistakes in documenting marks in the answer books. An examiner may have to correctly remember the question number, sub-division number and marks awarded and once marks are decided, turn back pages to the front cover and record the awarded marks in the appropriate row and column in the cover page. The situation is sometimes more complicated with the answers themselves involving numerals. It is quite likely that the following could be self-talk of an examiner:

> *" Question (2), subsection (iii) <answer is given as> 5, OK, this candidate has got the answer correct, full marks of 3 shall be given"*

It is quite natural that the paper shuffling required to go back to the cover page makes the examiner solely dependent on the memory to document the marks. When this is so, it is quite likely that the examiner may slip from "2 marks for question no 3" to "3 marks for question number 2".

When a large number of answer books are to be read by an examiner, the possibilities of such errors are high and the irritation caused by the paper shuffling and demand on memory might frustrate the examiners, affecting their presence of mind and objectivity and focus. The new design is aimed at solving the above subtle problems.

In the new design, the cover page has a fold back with a box cut open in the front cover, as follows.

When the examiner opens the answer book, he/she can open the fold and spread it out so that the area for recording marks is visible irrespective of the page that the examiner is viewing. This will enable the examiner to avoid any shuffling of pages. The question number can be read and the corresponding cell in the open fold can be first marked with a left hand finger and then **the answer read and mark decided and with one smooth and continuous eye movement,** and with only the mark being remembered, the examiner can with ease record the mark.

After marking the fold can be folded back to original position so that those who process the answer scripts will not find any difference in their work.

Appendix D: Scheme for Normalization of Internal Grades

Inflated grades given by certain (profit-motivated) academic institutions is a major concern expressed by the academic community against the practice of internal assessments. Unless this issue is confronted comprehensively and a robust solution evolved, the concept of internal assessment will not gain wide acceptance.

A common observation about internal assessment is that internal assessment marks do not correlate strongly with external assessment marks. Here the assumptions are that the external assessment has validity and reliability, and that the internal and external assessments are equivalent tests. The latter assumption needs not be true as internal assessment tests are ideally formative assessment and external assessments are summative. (However, such fine distinctions may not be seen in practice.)

Ironically, if we expect a strong correlation between internal and external assessments, then there is no need for internal assessment! Thus, a method for moderating the internal examination should ideally not hinge on the strong correlation between internal and external assessment, but on some other academically justifiable measures. The distribution of Grades/Marks seems to be a strong choice for such a measure. Even if we assume that the internal and external assessments do not use equivalent test instruments, it is fair to expect some similarity in distribution. By adjusting the distribution of the internal assessment grades in a simple way, we can avoid the grade inflation issue to a great extent. We illustrate this with three cases of distributions in internal grades. We assume that the external assessment has a more or less normal distribution of grades.

This moderation of internal assessment through mapping of grades will put positive pressure on teachers:

- To attempt practising a fair assessment that will ensure a natural grade distribution. This is the only way in which the grades they award will remain uncorrected. (This can be achieved by assuring that the question papers are of good discriminatory power).
- Avoid deflated grades and inflated grades, which will be automatically corrected

This method is superior to the traditional normalization based on equating averages and standard deviations, as it is less intrusive and simple. It does not alter each student's grade independently, but only re-maps the grades generally.

Example 1. Inflated Grades

In a class of 100 students, an internal examiner awards 95As and 5 Bs, while the external examiner awards 20As, 40Bs, 30Cs and 10Ds. Then the **peak of distribution for the latter is B**. We equate the peaks and map the grades accordingly.

Internal   **Modified Internal**

A   **B** Peak equalization
B   C
C   D
D   E
E   E (If we run out of mapping possibilities, the previous grade is repeated)

Example 2. Deflated Grades

In a class of 100 students, an internal examiner awards 5 Ds and 95Es, while the external examiner awards 20As, 40Bs, 30Cs and 10Ds. Then the **peak of distribution for the latter is B**. We equate the peaks and map the grades accordingly.

Internal   **Modified Internal**

A   A (In cases where we run out of mapping possibility, the previous grade is repeated)
B   A
C   A
D   **B** Peak equalization
E   C

Example 3. Fair Grading

In a class of 100 students, an internal examiner awards 10As, 35Bs, 25Cs, 20Ds and 10Es, while the external examiner awards 20As, 40Bs, 30Cs and 10Ds. Then the **peak of distribution for the latter is B**. The peaks are already equal and so no mapping is required. The awarded grades remain as such.

Internal	Modified Internal
A	A
B	**B** Peak equalization (already equal, so no effect)
C	C
D	D
E	E