UNE STRATÉGIE
DU DÉVELOPPEMENT
DES RESSOURCES HUMAINES

COMMUNICATIONS DÉCOULANT
DU SÉMINAIRE-ATELIER TENUE
À YAOUNDÉ, CAMEROUN,
DU 2 AU 5 FÉVRIER 1988
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Une stratégie du développement des ressources humaines

Communications découlant du séminaire-atelier
tenu à Yaoundé, Cameroun, du 2 au 5 février 1988

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A MEDICAL CURRICULUM FOR 2000 A.D.

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A MEDICAL CURRICULUM FOR 2000 AD.

A CASE FOR THE APPLICATION OF THE SCIENCE
OF EDUCATION IN MEDICAL EDUCATION

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The main business of a College of Health Sciences is indeed education notwithstanding the fact that this is best done in the context of equal emphasis on the traditional tripod of Teaching, Service and Research. About the one thing apart from management in which most academic members of staff of Medical Colleges are themselves untrained and hence ignorant is education.

The assumption is made that once you are well groomed in your own particular discipline, you are, ipso facto, equipped to teach it. Two problems arise:

First this assumption is not always correct. More often than not, it is in fact erroneous.

Secondly, even if it were true, the undergraduate medical students is not particularly interested in being taught your particular discipline. He is interested in learning to be a good doctor. Since the essence of good teaching is to facilitate student, learning and guide it to the achievement of its objective, it is about time that medical teachers take care to acquire the necessary skill to enable them do this effectively in respect of their student charges. Even when each teaches his/her discipline, there is an obligation, not only to ensure but to clearly show its relevance to the student’s main objective.

A lot has been said and written about the demerits of the traditional teacher/subject oriented medical curriculum in which teachers compete for time slots on the timetable in which to seek to impart to the weary student as much knowledge and skill as possible in the teacher’s own particular subject, often with little or no indication as to the significance or relevance of such knowledge and skill in the performance of the graduate doctor in a real practice situation. One needs must be cautious however in discussing those demerits because, inspite of them, many great doctors have emerged from medical schools running the traditional curriculum. You cannot argue against success. On the other hand many attempts to introduce newer concepts to curriculum design and administration have failed to take off, or fallen off the mark, but usually not on account of inherent demerit of the new concept but on account of reluctance of staff to alter old familiar ways.

None the less, over the years the academic discipline of Education has proven beyond doubt and established as facts certain concepts regarding human learning, the factors which promote or facilitate it as well as those which impede it or make it more strenuous. These may be summarised as follows:
1. Learning involves a change in the behaviour of the learner at the end of the learning process.

2. Learning is personal - different people learn by different means and at different rates; Educational systems must provide for this if they are to be efficient.

3. Learning must be aimed at realistic goals and the learner should share the responsibility for determining the methods of achieving these goals.

4. The learning process is facilitated more by active participation of the learner than by his passive reception - Practical sessions, discussion groups are superior to lectures.

5. Learning should therefore be experience-centred, and the experience must be meaningful to the learner in terms of his present goals or future life.

6. Transfer of learned behaviour to new tasks is improved if, in the learning process, the learner can discover relationships for himself, and if he has experience of applying the learned concepts within a variety of tasks.

7. Learning process is stimulated by feedback - the learner is encouraged by the knowledge of how he is progressing with respect to a given set of goals. Continuous formative evaluation stimulates learning.

8. Learning is facilitated by a satisfactory climate, characterised by good interpersonal relationships.

9. Learning is facilitated by expectation of reward and retarded by fear of punishment.

10. The learning process is influenced nearly as much by emotion as by intellect and cognition.

11. Learning under intrinsic motivation is easier than learning under extrinsic (other-directed) motivation.

12. One of the most important factors influencing the learning process is what the learner already knows; curricular design should take account of previous knowledge.

In this day and age, as the body of knowledge and skill required for the practice of medicine increases daily, and political and economic pressures prevent the otherwise logical extension of the requisite period of training. The medical teacher must perforce consider the adoption and application of those concepts known to increase the efficiency of the teaching/learning process, if only to enable him to continue to achieve the same laudable results as in the past, while coping effectively with continuing explosion in requisite knowledge as well as student population. It is against this background that we must consider a new approach to curriculum planning and administration in the Colleges of Medicine or Health Sciences which have the advantage of being planned at
A. THE WRITING OF OBJECTIVES: It is a known scientific concept that you start with a hypothesis, design your experiment, perform it and analyse your results to see if your hypothesis has been proved or not. If you simply designed and performed experiments without any hypothesis in view, it would be rather difficult to reach any conclusions about your results. Put in other words, if you started on a journey without a clear destination in mind, you would never know when you got “there”. So it is with education especially in these days of continuing explosion in the body of available knowledge and skill. If you simply taught without a predetermined objective you could go on teaching for ever and never get to the “end”. It is essential therefore to determine the objective of the educational programme as a guide not only to the required end point but in fact also to the most efficient way to get there.

Educational objectives are defined at various hierarchical organisational levels, becoming more finite and precise as we approach the more intimate levels of teacher/student interaction:

(a) National (State) objectives, concerning what the state hopes to achieve in respect of the programme.

(b) Institutional objectives: concerning the kind of graduates the institution hopes to produce at the end of the programme.

(c) Sectional objectives in respect of finite sections of the programme such as Year I, Year II, Community Health, or abnormal structure and function; stating what knowledge and competence the students are expected to have at the end of the particular section.

(d) Course objectives concerning the expected end result of the specific course and finally

(e) The objectives of a specific teacher/student interaction, spelling out the expected outcome in terms of student learning of a particular encounter - Lecture, discussion group, practical session or Seminar. The post card series in the appendix to this chapter illustrates the derivation and use of educational objectives in the design and execution of training programmes.

At least at the University level, we should be able to define our objectives down to the level of individual courses that need to be taught and examined. Such written objectives would guide not only the teaching/learning interaction, but also the evaluation which thereby becomes fairer, more objective and less arbitrary and punitive.

STUDENT SELECTION:
Having determined what the educational objectives of the training programme are, it is important that the characteristics of the type of students most likely to benefit from the training be determined, not only in terms of prerequisite previous knowledge, but also in terms of motivation, aptitude and any other parameter deemed essential to the attainment of the objectives of the course.
In case of a medical Course, there is general agreement that these character attributes such as motivation, aptitude, are equally if not more important than prerequisite previous knowledge as determined by performance in School Certificate or equivalent pre University examinations. Admissions to medical School should therefore not be based solely on performance in these or other examinations as is the case today. It is true that these other parameters are difficult to assess, but their assessment can not be beyond the capacity of Senior University teachers to design and execute even if by a process of experimentation.

**B. THE INTEGRATED CURRICULUM**

There is a need to emphasise the interrelationship of different parts of the curriculum to one another and to the expected competences and skills of the doctor on graduation. This suggests a need to relate the curriculum not to different scientific disciplines/subjects like Anatomy, Physiology, Pharmacology, Surgery or Medicine in the traditional way, but to the human body as it may be affected by disease or degeneration and require health care. This is the basis of the integrated curriculum using the body organ systems as organising principle and relating every major aspect of the course to identified patient problems and hence the students' major motive for entering the programme.

It is suggested therefore that the medical curriculum of 2000 AD would start to introduce the student to patient care from the very beginning. The student would learn the basic and clinical sciences clearly in the context of their contribution to his understanding of the patient's problems and the intervention required in their solution. Contrary to popular criticism, this approach does not, by itself, preclude the students from acquiring indepth knowledge of Basic Sciences, provided such indepth knowledge is deemed essential to the achievement of his educational objective. The only thing it insists on is the eradication of the artificial separation of the Basic Science and Clinical parts of the curriculum. The rest is up to the planners of the programme and the nature of the objectives of the Course as designed by them.

Furthermore in order to facilitate the administration of this integrated curriculum based on body organ System, the role of programme coordinators and Course coordinators whose functions cut across departments should be established with statutory responsibilities, and authority from the beginning. The experience of institutions that have tried to run integrated curricula without such statutory demarcations has shown a consistent proneness to self destructive conflict. A method of institutionalising the role of Programme coordinator without threatening the authority of the traditional departmental heads has been dubbed the "Lattice work" organisation adapted from the structure of the McMaster University School of Medicine. It is described here for the sake of completeness.

**THE LATTICE-WORK ORGANISATION**

The lattice-work organisation is a system that not only effectively shares out responsibilities and authority but achieves much more beside. It basically operates on committees.
DEPARTMENTS - VERTICAL PROPS

In this organisation, the vertical props of the lattice-work are represented by the departments. Each department represents a discipline defined as clearly as local conditions would permit. For instance, it is possible for all of pathology to be defined as one department. Similarly pathology can be seen as three, four or even five departments depending on the availability of manpower representing the different shades of the discipline, on the orientation and attitude of the men on the ground and on the availability of funds for intensive development of the various shades of the discipline. Basically it is essential that a department should contain men and women with similar background, engaged in similar activities and committed to similar objectives. The leadership should, without undue strain, be able to hold the team together without polarization. As soon as polarization develops or the strain of maintaining a depolarised state becomes excessive, it is time to create a second department out of the one. This has been the natural history of the development of departments as we know it, Paediatrics from Medicine, Ophthalmology from Surgery etc.

Functions of a department

The functional essence of a department in this system is to pursue intensive research or service in the discipline represented by the department. An overall departmental objective guides their activities and every member has a significant role to play in the achievement of such an objective. The need for additional staff is primarily dictated by the emergence of a new facet to the research or service objective that needs to be pursued. This way the staff strength of a department has a limit set by the functional objective of the department.

Responsibility of Departmental Head

The primary responsibility of the departmental head is to provide leadership and guidance not only for the team as a whole but also for each individual member of the team as he or she fulfills his or her role within the team. The departmental head, by the same token, has authority to assess the response of each member to his leadership in this respect. This assessment contributes to (but does not exclusively determine) the academic progress of the staff member within the college.

PROGRAMMES - HORIZONTAL LINKS

The horizontal interlinks of the lattice-work are represented by a number of interdepartmental (multidisciplinary) activities or programmes. These activities, as the simile suggests, represent the group activities that operate across departmental boundaries within the College. These activities may be the integrated educational programmes - be these undergraduate, postgraduate or vocational programmes. They may be research activities, or they may be service activities. The number and variety of such interdepartmental (multidisciplinary) activities depend, among other things, on the staff strength, the general orientation and competence of the staff, the institutional objectives or general commitment of the entire College and, of course, the availability of funds and facilities.

The place of individual staff in the horizontal programmes

Each member of staff within the College participates in, and contributes to one or more interdepartmental activities, according to his own skill, knowledge and commitment, irrespective of his departmental affiliation. Provided that once a horizon-
tal activity has been adopted by the system, every member with relevant competence must be available to contribute to its success. It stands to reason that no new “horizontal” activity may be adopted unless there is a consensus that available staff can competently cope with it without letting it or other commitments, suffer neglect. Sometimes the necessity to support a desirable new “horizontal” activity may dictate to a departmental head the need to recruit additional staff into the department. It is clear however that “horizontal” programmes cannot and should not generate or support staff without a “vertical” departmental home base.

For administrative co-ordination, all staff members participating in a horizontal activity or programme form an unit under the leadership of a Programme Director, or Coordinator, or Subdean. The programme Coordinator has the responsibility to provide leadership and guidance for all involved in the execution of the programme. By the same token, he also has the authority to assess the response of each participant to this leadership in form of the consistency and effectiveness of his or her contribution to the programme.

This assessment also contributes to (but does not exclusively determine) the academic progress of the staff member within the College.

One unique advantage of this lattice-work organisation becomes obvious at this point. That is, every member of the College has the advantage of at least two, sometimes more, independent primary assessments at all times. This tends to neutralise the influence of personality conflicts in the assessment process. This advantage increases of course if a staff member participates in more than one horizontal programme. There is however a danger of diminishing productivity if he spreads out into too many “horizontal” activities. Young academics would need advice and guidance in this regard. By definition, of course, no one is expected to belong to more than one vertical departmental home base.

ADMINISTRATION WITHIN THE LATTICE-WORK ORGANISATION
Within this lattice-work, administrative organisation is as follows:

Departmental Administration:
Each department has a departmental Head responsible to the Vice-Chancellor or the Provost for the day to day running of the department. To perform this responsibility, effectively he should operate as chairman of a departmental committee made up of all senior staff members of the department. This committee should meet once every month to discuss matters relating to the functions of the department as defined.

A departmental secretariat consisting of secretaries and typists serve the members of the department, either as a pool or on individual or group assignment basis.

Programme Administration:
Each “horizontal” programme is supervised and coordinated by a Programme Coordinator, Director or Subdean. He too functions as chairman of a Programme Advisory Committee. In the case of educational programmes, this Programme Advisory Committee is the Board of Studies.

In respect of Research and Service “horizontal” programmes the programme Advisory Committee is made up of the key participants in that programme who meet
as frequently as required to discuss and take decisions on the execution of the programme as well as evaluate its progress and identify its needs. The programme directors or Subdeans should, like their departmental counterparts, hold their jobs on behalf of the Vice-Chancellor or Provost and hence earn a similar responsibility allowance.

Each programme administration is serviced by a small secretarial staff that handles the coordinating activities of the programme director.

The College Executive Committee

In order to effectively coordinate the various facets of the College's function, or metaphorically speaking, to keep the lattice-work in stable dynamic equilibrium, all departmental Heads and Programme Coordinators should meet as a College Executive Committee, under the chairmanship of the Provost/Dean, as often as necessary, say once a month, to determine policy issues and make recommendation to the Academic/Faculty Board. My experience with Faculty Boards made up of all academic members of staff, has been such that I am personally inclined to think that the College Executive as described here should take the place of the Faculty/Academic Boards, and become the link between the college and the University Senate.

For the effectiveness of the Executive Committee in this regard, it is desirable that Heads of Departments should be other persons than Subdean and programme directors. If the same person holds the two posts in any one instance, the objective balance, is lost in respect of the department and the programme involved (Two heads are better than one).

STAFF DEVELOPMENT AND INDIVIDUAL PROGRESS

As previously stated, every academic faculty member belongs to a department within which his professional and research interests are catered for. The departmental Head is obliged to provide him leadership in finding his niche within the scope of the overall research and professional objectives of the department. In return, his response to this leadership in form of his research and professional productivity are assessed continually. This assessment counts towards his annual review for promotion.

Secondly every faculty member contributes to one or two horizontal programmes (be these educational, research or service) under the leadership of a programme director, or coordinator. An independent assessment of his contribution to each programme by the respective Programme Director similarly counts towards his annual review for promotion.

Appropriate weighting of these independent assessment reports should contribute to increasing the fairness of the annual review exercise of faculty members, and diminish the reliance on the "publication count" as the main yardstick of scholarly progress in the College of Medicine. Such assessment would also be relevant to the activities of the College. So that the growth of the faculty members as individuals would also add to the total growth of the entire College. This system has a lot to recommend it in view of the recent call for relevance in Nigerian Universities. The status quo has shown that it is possible for individuals to progress and grow by accumulating publications while the institution itself remains static or even degenerates, because there is no linkage between the individual activities and the objective of the institution.
BUDGETTING AND PLANNING THE CONTEXT OF LATTICE-WORK ORGANISATION

In these days of planning by objectives, the lattice-work organisation very clearly offers a mechanism of formulating specific activities with clear objectives and relating budgetary plans to these objectives. At the departmental level, research and in-depth study programmes revolve around clearly stated departmental objectives. The need for additional staff is justified on the basis of the research objectives of the department. The role of the new staff is clearly defined and this sometimes helps in determining the type of man actually recruited.

Departmental budgets clearly cover staff salaries and other emoluments, as well as basic research equipment. Every effort is made to encourage external funding of various aspects of the research programme through grant applications.

In terms of interdepartmental "horizontal" programmes, these are planned around the staff on the ground. Each programme has clearly stated objectives, and clear plans of execution and evaluation. A separate programme budget is provided for the execution of these objectives. Naturally this would not include staff salaries except in respect of a small nucleus of secretarial and technical staff, and some allowances for travelling and for external participants in the programme. Most of the programme budget would go to cover supplies and equipment.

Expansion of any programme or the initiation of any new programme would be by consensus of the staff on the ground through the College Executive, and should be based on time utilization considerations. Sometimes departments may be called upon to increase their staff strength in order to support a desirable "horizontal" programme.

This type of consideration of budgetary planning by objectives in lattice work organisation is, to me, much more realistic than the current "numbers game" of basing budgetary allocation on Staff/Student ratio. Just as the publish or perish" promotion numbers game" pushes academics to publish large numbers of insignificant articles; the budgetary "numbers game" forces many Colleges into admitting unrealistically large numbers of students, with no bearing on the nation's needs for the graduates of the programme, nor on the ability of the facilities of the College to cope with the student numbers.

C. TEACHING-LEARNING RESOURCES

Finally, the acceptance of the fact that the emphasis of the educational process is on student learning, the teacher being a resource manager, compels us to look critically at the traditional use of the various teaching-learning modalities. The title lecturer, with its emphasis on the Lecture modality is probably the most misleading title in the entire University system. While it certainly has its place, especially in the hands of experienced teachers, the lecture modality is perhaps the least efficient in terms of achieving any permanent behavioural changes in students in respect of knowledge, skill or attitude. It puts the student in a purely passive recipient role - Experienced teachers frequently instill audience participation in Lecture exercises.
Therefore student learning should be given its appropriate preeminence in educational programmes of 2000 AD. The time tabling of teacher-student interactions should feature less of lectures than hitherto and more of activities involving active student efforts e.g. Discussion groups, seminars, clinical clerkships and self-instruction through books, journals and especially audiovisual materials. If group discussions, seminars and clinical clerkships are to be meaningful, special efforts must be made to provide self-instructional materials and more teacher effort devoted to guiding students in their use.

In this direction medical Colleges of 2000 AD must develop a medical library very early. This library, beside the usual text books, reference books and journals must feature a museum of normal anatomy, with prossected parts, comparative anatomy and pathologic anatomy specimens, tissue microscope slides and photomicrographs, clinical case packages, Radiographs as well as videotapes, tape slides and other audiovisual materials, providing a considerable bank of learning resource materials. The time table should feature a considerable amount of "free time" for self-directed study in which students "under guidance" can use these materials for their own individual studies. Much as this concept has come to be accepted as ideal by many students and teachers alike, most medical colleges in Nigeria have not been able to venture into its implementation on account of financial limitations.

It is obvious that such a programme is cost-intensive in terms of initial outlay. However, without a doubt the benefits accruing from such outlay would be tremendous. It would free the College from the constant continuing pressure to increase staff establishment inordinately. It would in the end produce graduates who are competent in self-directed study and therefore able and willing to continually improve themselves on the job after graduation.

It must, sadly, be accepted that majority of graduates in the country today are not well-motivated nor competent to continually improve themselves on the job after graduation.

Therefore unless they are fortunate enough to get into a formal postgraduate training programme, they tend to stagnate intellectually and professionally. Those who get into postgraduate programmes experience considerable difficulty because most postgraduate programmes feature minimal formal teaching leaving the student to "learn" on their own. The question of continuing education and recertification was raised recently by the Federal Ministry of Health. It was greeted with fright and abhorence and rejection largely on account of this basic deficiency.

It is true that the decade of the Seventies featured attempts in Yaounde, Ife and to a lesser extent, Ilorin and Lagos to implement educational concepts embodying some of the principles discussed here. The Yaounde and Ife experiments failed because the African academic community of the period were not ready for so radical a departure from the beaten path ; This failure should however not detract from the logicality of the concept especially in the face of the world-wide call for efficiency in the use of manpower and other resources for the educational process.

It is therefore our fervent hope that the coming generation of medical educators will pick up the pieces and try again.