all of this happens, little or nothing is taught about wild animals, forest-
people interrelatedness (in a country where more than 70% of the people
live in and near forests), conservation and protection of forests, and why and
how forests are to be managed as ecosystems. The Department of General
Forestry of the College confers bachelor’s degrees in forestry and its sub-
degree or diploma level education prepares students for applied work in
forestry and forest industry: sawmills, plywood, furniture making, nursery
management, and machinery operation and maintenance. Graduates continue
to fill positions mainly as managers in Liberia one of the world’s largest
rubber estates, Firestone, and as supervisors of reforestation projects and
giant logging operations, and park administrators.

Recently, a document outlines the 7 basic objectives of Liberia’s education
philosophy (Education Law, 2002). The objective that mostly relates to the
subject of this paper – and hence is worth quoting – reads thus: “to make the
content of education flexible to reflect the aspirations and hopes of society,
as well as the legitimate manpower needs of students and the nation in
varying geographical and social settings, placing emphasis on responsible
citizenship and developing an understanding of, and appreciation for, the
culture of Liberia, Africa and other peoples”. Clearly, forestry education
must cease to be traditional if it is to meet these and related objectives of the
nation’s education philosophy. In other words, forestry education in Liberia
is wanting in good quality and relevance. Quality, for purposes of this paper,
is defined as the ability of a set of inherent characteristics of a product, a
system or a process to fulfil the requirements of customers or interested
parties. Relevance refers to the fit or the match between what a system
delivers and what society expects of it.

This paper is specifically concerned about the quality and relevance of
teaching, as opposed to academic or research programme structure and
administration at the College of Agriculture and Forestry. Its ultimate
objectives are to initiate and stimulate debate about the character and scope
of the felt weaknesses in forestry education in Liberia, and to define related
shortcomings and suggest where to situate the process of reform. This 3-part
case material draws on reviewed experiences and insights of an increasing
body of pertinent studies, re-enforced by the authors’ practical knowledge, to
achieve its objectives. As key thematic areas under which opposite subtitles
are explored, the first section describes Liberia’s education system. Second,
the paper outlines and examines some of the elements that are central to
curriculum development and teaching reform. Finally, section three presents
conclusions and makes a number of considered recommendations.
11.2 LIBERIA’s EDUCATION SYSTEM

11.2.1 Categories of schools

The substantive categories of Liberian education system consist of both regular and intermediate institutions and levels of learning. For the regular institutions, there are six categories. These are: (i) Early childhood education, (ii) Primary education, (iii) Junior secondary school (both academic and technical), (iv) Senior secondary school (both academic and technical), (v) Junior college and other post-secondary institutions, and (vi) Colleges and universities. There are 8 types of intermediate institutions, these are: (i) Teachers’ education, (ii) Vocational training, (iii) Adult education, (iv) Literacy programme, (v) Non-degree theological seminars, (vi) Seminars, (vii) Workshops and (viii) Conferences. The distinction or basic characteristics and levels of achievement of each category are discussed in detail elsewhere (Education Law, 2002). The focus of the paper is on college education.

11.2.2 The University of Liberia

The mission of the University is contained in six objectives, notably, to: (i) inculcate character, honesty, fair-play, thrift, and self-reliance sense of responsibility and the love of God and of people, (ii) encourage and develop in students the basic intellectual powers and tools that will prepare them effectively to live in a democratic society, (iii) guide students into habits of critical and logical thinking and in the choice of vocation, (iv) expose the students to problems of urban and rural areas, and a sympathetic understanding of agricultural life, and to stress the need for trained agriculturists, (v) emphasize the dignity of labour as an effective means of inducing every student to master a vocation while in school, regardless of future professional aspirations and (vi) shift teaching and learning tools from academic or verbal aptitudes to other dimensions of human nature – artistic ability, mechanical aptitude and ingenuity, master skills and dexterity, social sensitivity and resourcefulness.

For its academic programmes, the University has the following bachelors degree granting components: (i) Liberian College : The College of Social Sciences and Humanities, (ii) The William V.S. Tubman Teachers College; (iii) The William R. Tolbert College of Agriculture and Forestry, (iv) The College of Business and Public Administration, (v) The T.J.R. Faulkner College of Science and Technology, and (vi) College of General Studies. All
the colleges, except the college of general studies, confer bachelor degrees. The University has three professional schools and three graduate programmes. The professional schools are Louis Arthur Grimes School of Law, School of Pharmacy and A.M. Dogliotti College of Medicine; the Graduate School programmes are Graduate Programme in Regional Service, Ibrahim E. Babangida Graduate Programme in International Relations and Graduate Programme in Education Administration.

A variety of problems about the quality and relevance of education at the University and other levels involving disciplines other than forestry have been identified and critically assessed. These problems are common to all the academic, professional and graduate programmes of the University, including the College of Agriculture and Forestry. Chief among them are political interference in the affairs of the University, incompetence of leadership at that level, the lack of or inadequately trained and committed personnel, classrooms, and resources and fraud (The Analyst, 2007; Dolo, 2007; Gbessagee, 2002; Johnson, 2001).

11.3 CURRICULUM AND TEACHING AT THE COLLEGE OF AGRICULTURE AND FORESTRY

Besides being traditional, forestry as taught at the College of Agriculture and Forestry is denied the time it deserves. Students here continue to take some agriculture courses that rob them of the time they need to concentrate on core forestry courses. It is only in the second year of this 4-year degree course that this is possible. The need for reform in forestry education at this level is needed to bring about important changes, especially with the quality and relevance of what is being taught and who does the teaching. While revising a curriculum and improving instructional methods will not cover all that is required to improve forestry education, they are a vital pivot towards making good quality forestry education possible as first steps. A critical review of the curricula of the College undertaken on 16 August 2007, by Department Heads, shows the absence of basic statistics, experimental design and thesis preparation, and many other important subjects. Annex 1 shows the current curriculum of the Department of General Forestry, College of Agriculture and Forestry.

The curriculum clearly indicates, among other things, that students are not being prepared to carry out research that is so crucial to improving application of the knowledge acquired in college. Students at the Department of General Forestry do not take these courses in any college at
the University. Topor (2007) has developed a concept proposal that seeks UNDP’s support to revise and upgrade the curricula of the College. Liberia’s forests have both local and international value in the rich assortment of products and services they provide. Because of these and other reasons, forest management in Liberia must be credible, efficient, sound and equitable. Good quality and relevant forestry education will contribute to the efficient use and management of Liberia’s forests. For details on the social, cultural, economic and biodiversity conservation functions of Liberia’s forests, readers may want to review a body of work on the subject (McAlpine et al., 2006; Tropical Forest Update, 2005; UNEP, 2004).

11.4 CURRICULUM AND TEACHING REFORM

An abundance of data suggests that education reforms under certain circumstances in the past have failed to remove the problems they were intended to solve. Dobyns and Crawford-Mason (1994) and Parkinson (1995) identified four of what they believe are overriding problems in education. They are: (i) an inadequate emphasis on academic subjects, (ii) a lack of standards, (iii) poor teaching, and (iv) an absence of leadership. These are the same problems that the University of Liberia faces today. The prevailing current opinion is that reform requires fundamental and comprehensive change (Herman and Herman, 1994). Schools that learn and improve are those that approach change from a systems perspective. The more systemic the change, the more the school embodies change in behaviours, culture, and structure, and the more lasting the change will be, experts conclude.

There are a number of ways to improve curriculum. Two of the major approaches are participatory curriculum development and curriculum mapping. Curriculum mapping is an interactive and collaborative process consisting of 4 steps: (i) planning and preparing; (ii) recording the taught curriculum and revising it for potential gaps and/or overlaps; (iii) aligning the taught curriculum with standards and assessment; and (iv) using student performance to validate alignment and plan for continuous curriculum improvement (Lyte, 2006; Jacobs, 2004). Our focus here is on participatory curriculum development (PCD) and Total Quality Management (TQM) for effective teaching.
11.4.1 Participatory curriculum development

Participatory Curriculum development (PCD) aims to develop a curriculum from the interchanges of experiences and information among the various stakeholders in an education or training programme. The rationale for this emerges from positive outcome due to increased participation of different stakeholders in extension and community development activities. Many authors (Pretty et al., 1995; Chambers, 1997; Hagmann et al., 1999) have described participatory processes leading to more successful outcomes and increased effectiveness in planning, implementation and evaluation of rural development programmes.

Building on lessons learned from field-based practice, a critical, formative element of PCD is the identification of stakeholders. These may include academics, researchers, policy makers, extensionists, foresters and farmers. Rather than belonging to a small, selected group of experts, PCD involves a wide range of stakeholders in a meaningful way. It draws upon their experience and insights in a structured approach to curriculum planning, implementation and evaluation (Rogers & Taylor, 1998). This mosaic of stakeholders normally contributes to setting aims and learning objectives, engages in development of the subject matter being taught, and participates in the processes and experiences, which lead to clearly defined objectives.

The workshop process involves a series of nine steps, which are shown in Annex 2. Basically, such workshops are often divided into two main parts. The first part in this case is shorter and more structured, the second longer and more flexible, and is mainly dedicated to writing up the curriculum guide. The first part also aimed at creating a feeling of involvement among participants, since they are expected to work closely together in developing the detailed content of the guide during the second part of the workshop. For this reason the process must be quite participatory, and formal presentations should be kept to a minimum.

Step 1 and 2 of the process are designed to give participants the opportunity to reflect on experiences of forestry curriculum development in universities and other teaching institutions. After introductions, expectations, and a brief fact-finding exercise related to participants' background in forestry curriculum development, groups have to discuss their perspectives on what is involved in curriculum development. This is important since experience of other events had shown that there are often widely differing views about the nature of a curriculum and the approach used in its development.
Step 3 involves a short presentation on PCD so that some consensus could be reached in the group about terms and concepts. Steps 4-7 are all under the first part of the exercise. Steps 8 and 9 constitute the second part of the workshop process, which is to be devoted to planning and writing the main sections of the guide. Facilitators usually help in proposing a structure for the guide, based on the outcome of the first part of the workshop. The proposal is then discussed in a plenary to reach a consensus, and the participants are asked to individually sign up for any of the chapters to which the guide is agreed to be composed of. The groups will then be asked to include and elaborate on the main learning points which should be addressed, the main content, suggestions for appropriate learning methods and materials (ideally based on real practical experiences), and how learning would be evaluated. These steps and the process involved here are not written in stone. Practitioners may adapt these steps to their own circumstances and situation.

11.4.2 Total quality management and effective classroom teaching

Total quality management (TQM) was first introduced as a business management approach in the post-World War II era to reinvent shattered economies. More recently, education leaders have begun to recognize the potential for TQM applied to educational organizations. Quality management provides a connection between outcomes and the process by which outcomes are achieved. If, as many people realize, the cause of failures in education is a problem in design, quality management may be regarded as an ideal systemic process for managing change in public education (Frazier, 1997). Recent papers in engineering education describe quality-based models for classroom instruction (Shekunt and Buch, 1996; Summers, 1995; Bellamy et al., 1994) and curriculum reform and revision (Latzko, 1997; Stedingger, 1996; Jensen and Robinson 1995), and that improvement and management of education require the same principles used for the improvement of any process, manufacturing or services (Deming, 1994).

The decision to use TQM principles to guide change in schools is made for a variety of reasons. Some institutions are encouraged by business partnerships and training; others see the similarities with effective schools research (Lezotte, 1992). In some instances, it is a legally mandated redistribution of power and resources that led educators to embrace quality as a key part of the process of change. For Liberia, the impetus has been the legacy of more than 14 years of a senseless war that, among others, forced the few competent professors the nation once had into their graves or in exile.
Whatever the determining incentive, where quality management has been applied to education, it has made a huge difference (Dobyns and Crawford-Mason, 1994). Quality is creating an environment where educators, parents, government officials, community representatives, and business leaders work together to provide students with the resources they need to meet current and future academic, business, and societal needs (Arcaro, 1995). As has been the case in industry, when quality management comes to education, some long-held ideas, specifically about how to manage the teaching/learning process, have to change. In some instances, the ideas are not new but had long been ignored. In any case, education can be improved through quality management (Tribus, 1993).

There appear to be three levels of application of quality management in education. The first level is the management processes of a school. Sample school processes include strategic planning, recruiting and staff development, deploying resources, and alignment of what is taught, how it is taught, and how it is assessed. The next level is teaching quality to students. Students are recognized as both customers and workers in the educational system. Administrators need to involve students in their own education by training them to evaluate the learning process and accept responsibility for their learning. What the learning will look like is no longer predefined.

Educators know what they want to evaluate, but there are many choices as to how the students arrive at the goals set by them and by their teachers (Herman and Herman, 1994), hence students must be involved in this process. The highest level of quality principles is in learning. This is where it impacts the classroom. To achieve the desired results, educators must question their core teaching and learning processes and methods. Quality standards are established for each work process that results in improving grades and test scores. When the focus becomes instructional processes and student learning, the impact of quality management is the greatest (Felder and Brent, 1996).

Almost every known strategy for teaching effectively cited in standard pedagogical references has counterparts on a list of TQM components compiled by Grandzol and Gershon (1997). Examples include writing instructional objectives (clarity of vision, strategic planning), student-centred instruction (customer focus, empowerment, driving out fear), collaborative or cooperative learning (adopting a new philosophy, teamwork), assessment (measurement, benchmarks, continuous improvement) and training and
null
infrastructure, and trade. Clearly, most of these topics will demand training of or a change in the composition of faculty members, while others could be dealt with by linking with other parts of the education system and creating cross department teams that can effectively deal with the new areas of interest and concern.

The solution will not be to overcrowd the curriculum with new subjects, although this would to some extent be inevitable, but to teach students to learn through life long interdisciplinary education. The Department of General Forestry is one of many Departments in the College of Agriculture and Forestry and other colleges in the University. The University needs to develop a culture germane to building the foundation of higher education that is student focused, differentiated to serve a broad spectrum of skill, career and labour market needs. Investment needs to be made in research, scholarship, leadership, and innovation. As is true with the Department of General Forestry, the University of Liberia needs to make education in Liberia of good quality and relevance to the nation’s needs. To all of this, the principles and practices of curriculum development and total quality management will contribute significantly.

11.5.2 Recommendations

i. Implementation of at least four key sections of forestry education: Suggested to be considered here as a working hypothesis, forestry faculty at the College should be developed along the lines of 4 sections or departments: (i) forest environment (land classification, soil fertility, biology, ecology, wildlife, conservation), (ii) management and silviculture (dendrology, botany, statistics, genetics, scaling, logging, legislation, policy, tree physiology, reforestation), (iii) wood processing (organization and planning of industries, panels, pulp and paper industries, sawmills, wood chemistry and timber physics, and (iv) community-based forest resource management (community forestry, rural sociology, public education).

ii. Introduction of forestry education in primary schools: There is a need to introduce forestry education to primary school children (and possibly also secondary schools), through an environmental programme. It seems that such a programme would have its beginning with a National Policy on forestry education. Environmental consciousness should inform teaching in schools and must permeate all ages and sections of the Liberian society. A primary school forestry initiative will have implications for the
Active partnerships in the education programme of these schools, in such areas especially where forestry education will be powerful enough to influence ministers of education to invest in the importance of sustained yield management, the resource can be maximized by involving schools and others at all levels in promoting the understanding of forestry care, promotion in remote communities as a vital issue. The making schools in forestry schools are structured and managed. The extended access to basic education (primary, secondary, literacy) and educational opportunities that are deeply anchored in religions traditions.

Forestry education as a part of the curriculum of the public at large leads to pupils in schools in their curriculum education of the public at large. Forestry education is taught in schools. The course should also be integrated into the primary school curriculum and secondary school systems through non-formal education and education of adults. The number of children young people and adults through the primary and secondary school systems should be increased. An opportunity exists to bring these crucial resources to large numbers of children. Youth clubs and adult groups should be expanded and literacy and education in sustainable natural resource management to waterboards and forests in sustainable natural resources management in waterboards should be expanded. Youth clubs and adult groups.

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vi. Successful advocacy, in addition to taking the forestry messages to young people, would contribute to: (i) increasing access to basic education for forest area communities, (ii) improving overall quality of education for such communities. This includes improving and broadening basic education curriculum quality in general by the inclusion of a forestry unit within an environmental education programme and (iii) building the capacity of education and forestry sector policy makers and managers to address the above mentioned tasks.

vii. Allotment of sufficient time to forestry education. Modern forestry includes not only the physical and biological sciences, which now dominate the current curriculum of the College of Agriculture and Forestry, but also the human, and social sciences, economics, and engineering. For example, the development of large forest areas requires considerable skills and a considered regard for people living in or near the forest who are highly likely to be affected by forest management activities such as logging and the construction of logging roads. The organization of forestry courses should therefore be done with the cooperation of all other disciplines, but it should be separated from an agriculture course. Modern forestry is sufficiently developed and has enough challenges of its own, to require the allotment of the whole time available in order to give students proper training and pertinent orientation.

viii. Establishment of a “pedagogic resource unit” at the University of Liberia: The quality and relevance of training to the reform process is too important to be left to persons without authentic pedagogic training, recognized as well as credible skills. A “pedagogic resource unit” should be established at the University level. The objective of such a structure would be to assist as a matter of priority, young teachers or experienced teachers wishing to: (i) improve their teaching methods through a revised curriculum, (ii) resolve certain difficulties encountered in teaching, (iii) organize more relevant, valid, reliable and economically formative or certifactory evaluations, (iv) promote the training of new teachers and assist the institution to carry out education-based missions. To be credible, such a unit should have some degree of independence vis-à-vis academic authorities in matters concerning teachers and should demonstrate its efficiency though concrete results. Furthermore, the persons representing the unit should periodically be involved in teaching so that they are not totally excluded from practice. Such a