The Implications of the new Polytechnics Act, 2007 (Act 745), for Curriculum Development and Review in Ghanaian Polytechnics

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Abstract
Change is inevitable, and as an educational institution in a dynamic global environment, Polytechnics face the challenge of responding to the constant flux of changes in its environment in order to remain relevant. This paper presents a case of change for Ghanaian Polytechnics and highlights the need for response. The change is that until the passage of the new Polytechnics Act, (Act 745) in 2007, the National Board for Professional and Technician Examination (NAPTEX) under the NAPTEX Act, (Act 492), 1994, as part of its oversight responsibilities for non-University tertiary institutions, had the mandate for curriculum leadership in Polytechnics. This system, though well-intentioned, had its own drawbacks. With academic autonomy, however, this responsibility reverts to the Polytechnics, vested in the Academic Board. What become necessary for discussion are the implications of this change and the need for appropriate responses. The purpose of this paper is to examine the implications of this change for curriculum leadership – the planning, coordinating, implementation, evaluation and review of curriculum – in Polytechnic under the new Act.
Keywords: change, curriculum, curriculum development, Polytechnics

1. Introduction

Education constitutes one of the fundamental elements in the development and improvement of the quality of human life. It allows individuals and societies alike to unlock their potential, expand their horizon and adapt to changes in a dynamic world. Significant to any system of education, therefore is the need to provide the skills and attitudes which assure effective exploration and efficient exploitation of national resources. This builds up of capacity for the production of larger quantities and higher quality of goods and services. To achieve this goal, it is now widely recognized that technical and vocational education and training (TVET) holds the key.

As a system of education, TVET refers to 'those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life' (UNESCO/ILO, 2002). Within the framework of Ghana's national development agenda, TVET seeks "to provide a mix of knowledge and career focused, hands-on, skills-based education that is needed to run the productive sectors of the economy and build the nation" *(Government White Paper on Education, 2004).* It is within the context of this quest for practically-oriented and skill-based human capacity for sustainable development that Polytechnic education becomes significant, giving TVET both meaning and fullness. According to the *Government White Paper on the Reforms to Tertiary Education System, (1991)* Polytechnic education is intended to "provide the opportunities for completing the cycle of technical education as well as a capacity for higher-level practical technician [and now professional] training and research". To make meaningful contribution therefore, it is important that Polytechnics constantly re-examine their mandate and then take necessary steps to seize the opportunities in their environment to respond to the challenges they face in order to remain relevant.

The numerous challenges Ghanaian Polytechnics face notwithstanding, the passage of the new Polytechnic Act, 2007, Act 745, which upgrades Ghanaian Polytechnics to autonomous degree-awarding institutions count among the significant strides towards growth. The purpose of this paper is to examine the implications of this Act which mandates the Academic Board of Polytechnics to assume the responsibilities of curriculum development and review for curriculum leadership – the planning, coordinating, implementation, evaluation and review of curriculum. It begins with a review of the rationale for Polytechnic education in Ghana and the road to academic autonomy. It then identifies the opportunities and challenges presented by the new Act and what the implications are for curriculum development and review in Ghanaian Polytechnics. It examines the need to refocus on the Polytechnic educational philosophy via this mandate, the need to review the current curricula, to re-assess the criteria for admission, to re-examine the methods of teaching, learning and assessment as well as the need to build staff capacity for curriculum leadership. The paper concludes with the recommendation to develop Curriculum Development and Review Policy to provide the necessary framework for action.

3.0 Historical Developments of Polytechnics in Ghana and the Road to Academic Autonomy

Historically, Polytechnics in Ghana started as trade schools in the pre-colonial and colonial era. This was driven by the need for trained field men and industrial craftsmen to support the exploration of the nation's resource such

as timber, gold, etc as well as for surveying, mapping and the development of physical infrastructure such as habours, railway and road networks throughout the country. With the introduction of the first Government of Ghana Accelerated Development Plan for Education in 1951, these trades schools were upgraded to technical institutes with improved curriculum under the Ministry of Education. This need became even more apparent during the post independence era when a good number of skilled manpower was required for the realization of the country's Industrial Development Policy as part of the country's Development Plan in the 1960s. As a result, three technical schools were established in Kumasi, Takoradi and Accra. Based upon the study and recommendation of British Engineer and Technical Educationist, Sir Ronald Russel, the existing three technical institutes were upgraded to polytechnics status in 1963/64. Recognizing the need for more technical management staff after this initial training, City and Guilds of London programmes at the technician level were introduced into the polytechnics under the Ghana Education Service (Amoah-Mensah, 2007).

In time, the programs run by these Polytechnics and technical and vocational institutes became saddled with various challenges ranging from political interferences through resource constraints to institutional weaknesses. For example, the change of Government in 1966, caused the growing pace in the development of the TVET sub-sector to stall (Budu-Smith, 2005). In terms of resources, the level of government support for technical and vocational education from the craftsman in technical and vocational schools to the technician level have, been rather modest, in view of the kinds of facilities and resources needed for effective education. According to the Ministry of Education (2002) only 1% of the Ministry of Education's budget is allocated to the TVET sub-sector while the Ministry of Manpower Development and Employment allocates not more than 12% to the TVET sector under it. Key among the institutional weaknesses was the lack of a national policy to guide the management and development of TVET programmes in a coordinated manner (Budu-Smith, 2005). The linkages between these post secondary technical schools and other tertiary institutes were also generally very weak making it difficult for students of the programmes to progress academically. This may partly be attributed to the fact that the programmes provided were specific rather than comprehensive – being limited to specific trades and industries such as Carpentry and Joinery, Block laying and Concreting, Cookery for the Catering Industry, and production agriculture. Consequently, students from these programmes became highly deficient in a world of growing knowledge in areas such as mathematics, science, and English language.

As a result, technical and vocational education and training lost most of its worth. Public perception of TVET including Polytechnic education therefore became one of second-rate being almost the fate of students considered academically weak, who opt for Polytechnic because they could not make it to the university.

In 1987, the Government of Ghana embarked on massive reforms in the educational sector in order to reverse the observed decline in the educational system and to re-orient schools towards a more cost effective, relevant and practical system. Principal among the objectives of the reforms was the need to re-orient and improve the quality and relevance of the school curricula, by moving it from a purely academic focus towards one that combines skills acquisition and attitudes formation (Anamuah-Mensah, 2002). As part of these reforms, in 1991, the Ghana Government Tertiary Education Reforms was started. The main goal of the reform was to expand access, improve quality of teaching and learning and provide the much-needed infrastructural base for accelerated technical manpower delivery for sustainable economic development. Following the findings of the reforms committee, the Government White Paper on the Reforms to Tertiary Education System (W.P. No. 3/91) gave prominence to Polytechnic education, and in 1993 the existing Polytechnics were upgraded to tertiary status with the promulgation of the Polytechnic Law, 1992 (PNDCL 321). With this elevated status, Polytechnics were removed from under the management of GES and placed under the National Council for Tertiary Education (Effah, 2005).

As tertiary institutions, under PNDCL 321, Polytechnics were given the mandate to provide tertiary education, through full time courses in the fields of manufacturing, commerce, science, technology, applied social science, applied arts, etc. In addition, they were to encourage the study of technical subjects at tertiary level while creating the environment and providing opportunities for development, research and publication of research findings *(Polytechnics Law, 1992 PNDCL, 321, Section 2*). Accordingly, they were to award such certificates and diplomas as may be agreed upon by their Councils in collaboration with the National Accreditation Board and National Technical and Professional Examinations Board. Corollary to this, they could also award degrees, subject to such conditions as the authority responsible for higher education shall direct *(Polytechnics Law, 1992 PNDCL, 321, Section 3 a, b*).

Of greater significance for the purpose of this discussion is the fact that under this Law, Polytechnics through their Academic Board had the mandate for curriculum leadership – the responsibility for planning and coordinating curriculum development and review. The Academic Board as part of its function had the responsibility for

- *determining the criteria for admission of students*,
- *developing the content of curricula,*
- *the review of courses as well as*
- *determining the procedure for assessing and examining students (Polytechnic Law, 1992, PNDCL 321,*

section 12 clause a, c, d and e).

However, in 1994, the National Board for Technician and Professional Examination (NABPTEX) was formed to provide oversight responsibility for all non-University tertiary institutions including Polytechnics under the NABPTEX Act, 1994 (Act 492). Under this Act, NABPTEX was given the mandate for curriculum leadership. For example, NABPTEX had the responsibility for *"[reviewing] syllabuses for general curriculum enrichment*" (NABPTEX Act, 1994, Act 492, section 2 clause 2d). In principle, this Act made of non-effect Section 12 of the Polytechnic Law, 1992 (PNDCL 321) and in practice made the Academic Board of the Polytechnics subject to NABPTEX in all matters of curricula development, improvement and general academic quality control.

This system though well intentioned had its drawbacks. First, it killed healthy competition among Ghanaian Polytechnics by stifling institutional innovativeness for curricula improvement. This was principally because all polytechnics had to use the same curriculum content for a given course of study. In many ways it also made Polytechnic education non-responsive to changing needs of industry and commerce and the country at large, as individual Polytechnics could not review their curricula until NABPTEX initiated it. To cite the case of the Building Technology and other engineering programmes, these have not been reviewed since 2000. In comparison, the Building Technology curriculum in KNUST used from 1998-2002 was reviewed in 2004, and in 2008 the entire curricula was overhauled and rationalized into two different concurrent programmes namely BSc. Construction Technology and Management and BSc. Quantity Surveying and Building Economics. This was in apparent response to the national need for higher capacity in construction technology as well as the global market demands for more specialized professionals in the field of Quantity Surveying. Thus, it took NABPTEX practically too long to initiate and pursue a review of the curriculum in Polytechnics.

This situation continued until 2007 when the Polytechnics Act (Act 745) was passed. What is significant among the provisions of the Act is that Polytechnic institutions are now not only tertiary institutions in status capable of awarding degrees, but also have unequivocal academic autonomy in which they have the powers to develop and implement their own curricula, just as Universities. The interest at this point of our discussion is to examine how important the curriculum is to the mandate of the Polytechnics and hence the extent of this opportunity, and what the response of the Polytechnic institutions should be.

4.0 Curriculum Leadership as a Means for Achieving Educational Goals

The curriculum is "*a plan for learning"* (Taba, 1962), and hence provides the means for achieving educational goals. It refers to "all the planned and guided learning experiences and intended outcomes, formulated through systematic reconstruction of knowledge and experience, under the auspices of the school, for the learners' continuous and willful growth in personal-social competence" (Tanner and Tanner, 1975). By it the rising generation becomes knowledgeable and competent in the life of society (Tanner and Tanner, 1995). Thus, the curriculum embodies the purpose and programmes of an educational institution. Taba extends the definition of the school curriculum to include the processes of actually translating purpose and programmes into that experience by noting that a "curriculum usually contains a statement of aims and specific objectives; it indicates some selection and organization of content: it either implies or manifests certain patterns of learning and teaching, whether because the objectives demand them or because the content organization requires them. Finally, it includes a programme of evaluation of the outcomes".

The term curriculum thus embodies the totality of the philosophy of an educational programme, captured in the form of stated aims and objectives, related in the content of the study programme (say the course syllabus), activated through selected teaching and learning methodology, and accessed through a system of feedback. This includes a description of the structure of training [entry requirements, length and organization of programme including its flexibilities] as well as the systems of quality control. The conclusion is that given the immense role of the curriculum to the very essence of an educational institution, task of the development and review of curriculum is therefore fundamentally crucial if Polytechnics as educational institutions would continue to remain relevant.

According to Wiles and Bondi (1993), *curriculum development* refers to the process of designing a learning experience for students and activating this through a set of coordinated activities. It also involves creating the environment to coordinate in an orderly manner the elements of time, space, materials, equipment and personnel needed to develop the curriculum (Feyereisen *et al.,* 1970). Its purpose is to research, design and 'engineer' the working relationships of the curricula elements that will be employed during the instructional phase in order to achieve desired learning outcomes (Hauenstein, 1975). Thus, curriculum development involve the analysis of educational needs, in terms of the knowledge, skills and attitudes required, the selection and organization of the programme content, the design of the teaching and learning methodologies, as well as the systems of assessing learning outcomes. Curriculum review on the other hand, becomes necessary to ensure that the developed curriculum is comprehensive (complete in terms of the knowledge and skills required to be developed) and relevant (responsive) to the needs and demands of society. This involves taking steps to identify and to correct the inherent deficiencies and observed anomalies, as well as introducing new ideas or innovations for quality

enhancement and overall curriculum enrichment.
These responsibilities require astute leadership. This involves the task of using the requisite powers and influence to initiate, pursue and complete curriculum development and review (Wiles and Bondi, 1993).
This constitutes one of the mandates of Polytechnics as autonomous tertiary academic institutions.

3. The Mandate for Curricula Development and Review under Act 745

Against the background of the many challenges Polytechnics face, the promulgation of the Polytechnics Act, 2007, (with academic autonomy for Polytechnics), came as a major milestone in the development of Polytechnics in Ghana. In the view of this paper, the Act allows for healthy academic competition among Polytechnics in Ghana and hence accelerated growth through opportunities for innovation. As degree awarding institutions, at least theoretically, Polytechnics can provide access and equal opportunity to individuals who choose their career development along the path of technology on the career ladder. It also helps correct wrong and antiquated notions of technology education as being sub-standard and hence ensures some parity of status between Polytechnic and University graduates in the society. Besides, it lifts the image of Ghanaian Polytechnics internationally and encourages more meaningful contribution to the global intellectual community.
As per Section 15 Clause 1(a), (c) and (d) the Academic Board of the Polytechnics as part of its functions has the mandate to:

a) determine the *criteria for admission* of students*;*
c) determine the *content of curricula;*
d) determine academic standards, validation and *review of courses*
e) assessment and examination of students

In many other ways this mandate provides opportunities for growth. First, it eliminates the drawbacks under NABPTEX such as the 'political' interferences and bureaucracies associated with curriculum development and improvement. Secondly, it provides for the independence of various Polytechnics in making decisions regarding their curricula. Thus, as it becomes necessary individual Polytechnics can initiate, pursue and complete curriculum development and improvement in relation to national and international standards. It thus emancipates Polytechnic education from a sense of inferiority while allowing for effective integration of technology and liberal education in curriculum construction to improve the production of technological manpower. Above all, it provides the prospects for Polytechnics to assert, distinguish and redefine themselves.
With these opportunities however, come crucial challenges. First, given the autonomy as degree-awarding institutions, there is the temptation for Polytechnics to metamorphosize into universities. i.e. to confuse their unique place as technology and skill-based institutions to more theoretical and knowledge-based ones. Secondly, it presents the challenge of capacity for the responsibility of curriculum leadership in term development as well as quality control.

5. The Implications of Act 745 for Curriculum Leadership in Ghanaian Polytechnics

In our view, the implicit understanding deriving from the foregoing discussions is that Polytechnic institutions are required under the new Act to provide leadership for curriculum development and review. To maximize the benefits of this mandate and to fully address the associated challenges, Polytechnics must seize the occasion to:

- Refocus on their educational philosophy by revisiting their mandate and mission statements;
- Review the content of their curricula to enhance the relevance of courses by taking steps to correct the inherent technical deficiencies and observed anomalies in order to introduce innovations where necessary;
- Re-assess the criteria for admission to provide improved linkages for the academic progression of technical and vocational-based students;
- Re-examine the methods of teaching and learning including assessment for effective realization of learning outcomes (curriculum implementation);
- Take steps to build staff capacity for curriculum development and improvement.

5.1 Refocus on the Polytechnic Educational Philosophy

Hutchins (1968) observes that "no educational system can escape from the political community in which it operates. The system must reflect what the political community wants it to do." The needs of the society therefore serve as both the source and an influence for defining educational objectives and curriculum development (Tanner and Tanner, 1993). The task of setting the aims and objectives – philosophy – of an educational programme hence usually emerge as a function of the national development agenda (Wiles and Bondi, 1995). Against the background of the national vision of sustainable economic growth and the realization of the Millennium Development Goals, the Polytechnics Act, 2007, provides polytechnic should: –

a) provide tertiary education through full time courses in the fields of manufacturing, commerce, science, technology, applied social science, applied arts and any other field approved by the Minister; and

b) provide opportunities for skills development, applied research and publication of research findings.

Thus, by combining theoretical training with practical exposure, Polytechnics are required to produce competent and highly skilled human resources for direct absorption by industry in line with the national human development goal. This is necessitated towards producing knowledgeable, well-trained and healthy population with adequate capacity to support a private sector-led accelerated economic growth and poverty reduction.

Anecdotal evidence suggests that most Polytechnics are drifting in focus. This concern was therefore topical at the Conference of Commonwealth Association of Polytechnics in Africa (CAPA) in 2005 *(Proceedings of the Commonwealth Association of Polytechnics in Africa, 22nd -27th August, 2005)*. Budu-Smith (2005) also observes that most Polytechnics in Ghana seem to have lost focus in the development of human resources at the tertiary level and are rather attempting to operate in the shadows of the universities.

He argues further that philosophically, "while universities are academically-oriented, with their focus on academic research in search of knowledge for breaking new grounds to expand the frontiers of knowledge for advancement, polytechnics [in addition to practical research] are to foster the teaching of technical skills and the development of innovations at the tertiary level for productivity for commerce and industry" (Budu-Smith, 2005). Thus, while universities have the primary business of generating and disseminating new knowledge for growth, polytechnics are required to build industrial skills and to help form professional attitudes and competence for industrial growth, wealth creation and socio-economic development. In order to remain relevant, it is of primary importance that Polytechnics harnesses all their available resources in this direction.

5.2 Review the Content of the Curricula for Relevance and Competiveness

According to Tanner and Tanner (1993) the function of the school and the model of curricula embraced [reflects] the demands and expectations of the larger society. Far from being a tool for perpetuating a particular academic discipline, the chief mission of any educational programme is to produce graduates who are capable of becoming active, participating, contributing members of society (Wiles and Bondi, 1995). The need to make the curriculum relevant i.e. demand-driven, can therefore not be overemphasized.

Anamuah-Mensah (2002), notes that "one of the challenges we face as a nation is the relevance [or responsiveness] of our national curricula to the changing needs of society and other external factors". Similarly, the JICA report on *"The Study for Development of a Master Plan to Strengthen Technical Education in the Republic of Ghana"* observed that the curriculum in Polytechnics is too theoretically-oriented with little or no content for practical training of students, thus, making them unproductive on the job market (MOEYS/JICA, 2001). The Commonwealth Association of Polytechnics in Africa at its conference in 2005 noted with various degrees of emphasis the need to make the curriculum of Polytechnics relevant to the demands of society. For example, Nsiah-Gyabaah (2005) notes that the relevance of technical education in Ghana in general has been undermined by the curriculum, which focuses more on theory than practice. He adds that the content of most of the curricula of our technical and vocational institutions are out of step with the nations development objectives. Afeti, *et al*., (2003) observe that the curriculum in Ghanaian Polytechnics are out-of –date and non-responsive to the needs and demands of industry and the labour market. Different calls for review have therefore been put forward. Gasper (2005) observes that Polytechnics in Africa should diversify their courses beyond the traditional ones now being offered and incorporate emerging competencies into their curriculum. He further notes that Polytechnics should [therefore] review the courses offered to reflect the continuously changing needs of the economy and to still maintain their relevance." In terms of methods of teaching and assessments, others have called for the adoption of competency-based learning in Polytechnics in Ghana, (Agodzo and Songsore, 2005).

Making the curriculum relevant means "taking into account the changes taking place in the society as well as the external forces that impinge on the society and shape it" (Anamuah-Mensah, 2002). These factors or forces include for example, changes in the demand for higher education, as well as external forces such as globalization and advances in information and communications technology (ICT). There are increasingly new techniques for teaching and learning particularly in higher institutions in general and specific programmes of study in particular. Advances in ICT have resulted in information or knowledge explosion affecting not only the society's expectation of graduates but also students' expectation and attitudes to life and learning in general. For example, whereas it was once possible for a student to master a specific field of knowledge, it is now more realistic to expect that graduates acquire the necessary reasoning, critical thinking, and communication abilities that will enable him or her to acquire specific job-related skills continuously throughout his or her life. Thus, it becomes increasingly difficult to tell which kind of knowledge is crucial. The task of curriculum planners hence is to seek to understand the true nature of social changes so that they can programme for these changes in the schooling process (Wiles and Bondi, 1993).

In practical terms, reviewing the curricula involve among other things taking steps to identify and correct the inherent deficiencies and observed anomalies. It also means introducing innovations into the curricula in response to changing socio-economic demands and environmental concerns. For example, although students study Law in the Building Technology programme, this relates essentially to the legal system and a basic knowledge of the law of contract and those relating to health, safety and welfare. It may be useful to introduce a complete study of the National Building Regulations in light of the many cases of building collapse and the lack

of development control in the country. And in response to the global concern for sustainability, a shift onto issues of sustainability cannot be overemphasized in all aspects of curriculum.

5.3 Re-assess the Criteria for Admission

It is safe to argue that the academic autonomy of Polytechnics and the mandate for awarding degrees means some competition with universities running programmes similar in nature. Though intended to follow different philosophies, it is now not uncommon to find HND graduates seeking to continue their training in the universities. This seemingly has reduced the HND qualification to an entry requirement for admission into various levels of degree programmes in the universities. Indeed, some universities are providing the opportunities for continuing education for matured students with Technician II and III to pursue various degree programmes through the instrument of some form access courses. This is justifiably in response to heavy backlog of polytechnic graduates seeking higher levels of education.

To improve access and enhance linkages for these technical and vocational-based programmes for higher technical level manpower training, Polytechnic institutions must also awaken to this need. Thus, without compromising academic autonomy, it may be necessary to reassess admission requirements not only in the light of theoretical knowledge but practical competence in order to provide a more suitable path for continuous technical and vocational education and training in Ghana. It also means that, while the initiative by NAPBTEX to reserve the Pre-HND programmes or Access Course for students from purely technical and vocational backgrounds is commendable, a tracer study on their performance may be necessary in order to adequately make up for their deficiencies and not compromise quality on the altar of academic autonomy. Special modular and tailor-made certificate courses can be also be organized for tradesmen, craftsmen and field artisans in the industry, the majority of who have qualifications up to JSS. This will not only provide increased source of financing in the face of the ever-dwindling government support for Polytechnics education, but would also make Polytechnics relevant in the total mission of TVET.

5.4 Re-examine the Methodology for Teaching, Learning and Assessment

Without due diligence and support for the Polytechnic educational philosophy, the methods of teaching, learning and assessment in Polytechnics in Ghana has gradually, consistently and perhaps now apparently drifted onto a purely theoretical, academic path.

Yet, crucial to realizing the objectives of any curriculum is the method or approach used for creating educational experiences and achieving learning outcomes. Although Polytechnics are required to provide hands-on training for skill acquisition and attitude formation, evidence on the ground shows greater emphasis on theory than practice. The method of instruction is now almost entirely classroom teaching, characteristically, lecturer-centred, while student learning is essentially the retention of facts. The ultimate goal of learning for most students therefore is towards passing examination and getting a certificate.

The findings of the JICA report on*" The Study for the Development of a Master Plan to Strengthen Technical Education in the Republic of Ghana,* shows that Competency-Based Training methodology provides a useful tool for effectively responding to the challenge of skills upgrading and competence building for industry and commerce (MOEYS/JICA, 2001). Accordingly, the NCTE with the assistance of NUFFIC and other Government support mechanisms has embarked on a programme to systematically introduce the Competency-Based Training (CBT) methods in all Polytechnics.

As a system of education and training, CBT involves learning methods through which students acquire and demonstrate the required competencies and their ability to carry out the professional tasks in professional jobs after graduation. It is student-centred (students are at the centre of educational methodology), task-based (learning activities are directed towards performing professional tasks) and competence-oriented (learning tasks are formulated to develop competencies that are needed to perform the professional task of future work). The Lecturer, therefore, acts essentially as a coach providing guidance and stimulation in the development of competence.

This system has already been adopted for certain programmes in some institutions such as the BTech. in Building Technology in Cape and Sunyani Polytechnics as well as HND Agricultural Engineering programme in Wa Polytechnic. This is intended to be replicated in all Polytechnics. Against the backdrop of experiences in the Netherlands other countries however, it is suggested that CBT in the Polytechnics should be considered in an adapted and appropriate form (Nsiah-Gyabaah, 2007).

5.5 Build the Capacity of Staff for Curriculum Development and Improvement

Curriculum development or improvement is always a case for curriculum change. This change however is not in the sense of casual random alterations to curricula content for example but a purposeful introduction of new ideas into the curriculum. This requires some informed leadership. Curriculum specialists identify these leaders as supervisors, administrators and teachers involved in the planning, coordinating and management of curriculum development and improvement (Wiles and Bondi, 1993). Under the NABPTEX Act, this leadership was provided by the NABPTEX. This leadership is now required to be provided by the Academic Board of the various Polytechnics.

The mandate for curricula leadership therefore means that Polytechnics must build staff capacity to meet this need. This would require intensive programme of staff orientation, training and development rather than a single-day one-off workshop geared towards enhancing the knowledge and competence of staff in issues of curriculum development and review. A radical re-orientation of staff will be necessary to bring members to understand and accept the Polytechnic educational philosophy, as well as the demands and culture of Polytechnic education, while continuous training will be useful to provide the specific skills needed to implement the curriculum effectively.

This is crucial because most members of staff who constitute the Academic Board are university graduates with very little or no background in curriculum development. To be effective under the new Act, it is imperative for the Polytechnics through the Academic Boards to design programs that seek purposefully to build the capacity of the staff not only for curriculum development but also its effective implementation, evaluation and review. In this way members can make very meaningful contribution to the process of curriculum improvement.

6. Recommendations

To help take full advantage of the opportunities opened to Polytechnics in Ghana and effectively address the challenges that ensue, the following recommendations are made.

1. The Polytechnics should by means of expert advice develop a Curriculum Development and Review Policy to provide the framework for curriculum change and leadership.
2. Polytechnics must as a matter of urgency consider reviewing the current curriculum;
3. Polytechnics can arrange for tailor-made courses in curricula development and review for staff in collaboration with UCC or UEW;
4. Carefully designed tracer studies on the performance of Polytechnic products on the job market should be undertaken to provide information for the development of demand-driven curricula.

Conclusion

The conclusion is that the demands and expectations of society with respect to competences are fast changing. To remain relevant in the system of Ghana's education, Ghanaian Polytechnics respond through innovative curriculum development and review mechanisms. The reason is that traditional and conventional methods and systems would fail to deal with these new conditions and challenges: obsolescence makes them inapplicable. It is therefore important for Ghanaian Polytechnics to explore new ways of meeting societal needs in order to remain relevant in the 21st century. The Polytechnics Act provides one rare opportunity through curriculum leadership. It is important for Polytechnics to appropriate this to the full. As the Scriptures note, *"....no one puts a piece of unshrunk [old] cloth on an old garment; for the patch pulls away from the garment, and the tear is made worse. Nor do they put new wine into old wineskins, or else the wineskins break, the wine is spilled, and the wineskins are ruined. But they put new wine into new wineskins, and both are preserved." (The Holy Bible, Matthew 9:14-17).* Thus, the call is not for patched changes but for more comprehensive innovative ways of responding to changing societal demands through curriculum development and review.

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