

QUANTITY SURVEYING EDUCATION IN GHANA

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Quantity surveying education in Ghana has always been British. The profession which began as a Building Accountant course incorporated, with time, costing and allowed the Quantity Surveyor the performance of the role of a cost advisor in Construction. The Quantity Surveyor, in present day construction industry, uses his ability to analyse cost components of a construction project in a scientific way and apply the results of his analysis to a variety of financial and economic problems confronting the developer and the designer. The study sought to appraise the educational system in the country with regards to the Quantity Surveying profession. It identified three phases in the educational system in the country; they were the Second cycle, Tertiary and Post tertiary educational phases where relevant courses inculcate the necessary skill into aspirants of the Quantity Surveying profession. Samples of clients, consultants and contractors and all members of the industry were surveyed, using structured interviews with the aim of identifying the most important features of the educational system and the inherent problems that require immediate attention. Sampled opinions were analyzed and a critical assessment given to the kind of education affecting the Quantity Surveying profession. The role of the Quantity surveyor is redefined in the light of the educational system received.

Keywords: *Quantity surveyor, Cost advisor, Construction, educational system*

INTRODUCTION

The list of abandoned projects in the country is endless. Main causes of such actions normally are cost and time overruns caused by delays, underestimation, overestimation, and cash flow problems etc. The cost implications to both client and

contractor or developer cannot be overemphasized. The need therefore arises for a professional whose job will be to give judicial advice on cost aspects. A quantity surveyor by virtue of specialist training and experience is able to advice on project cost,

expenditure and also ensure that the financial provisions of the contract are properly interpreted and applied, prepares interim valuation and final account. A quantity surveyor is a professional in the construction industry who has the ability to analyze both cost components and practical physical construction works of a project in a successful way so as to be able to apply the results of his analysis in solving problems peculiar to each project. The introduction of the Professional Bodies Registration Decree 1973 (National Redemption Council Decree No. 143, Section 18:20) allowed only those belonging to the Quantity Surveying division of the Ghana Institution of Surveyors to practice Quantity Surveying in Ghana.

Qualification is on the basis of passing professional examinations administered by the Ghana Institution of Surveyors which is developed along the lines of a parent professional body- the Royal Institute of Chartered Surveyors or the Institute of Quantity Surveyors. Bearers of a degree course in Building Technology undertaken by the University of Science and Technology are qualified to take the examinations.

There are several options in the Quantity Surveying field. One could be a project manager, a contractor, or client's Quantity surveyor. The nature of the profession in all these fields requires primarily a fair extent of knowledge in both design and economics of the construction market. The required training to enable the performance of such a role begins during the second cycle institution phase, now the senior secondary school system where various subjects in the sciences, technical as well as some general arts with emphasis in elective mathematics provide necessary knowledge for application in the Tertiary phase. Another trend is achieved through Technical and Vocational Institution in the country.

A Ghana Education Service release confirms about twenty Technical and Vocational Institutions in the country. (Ministry of Education Ghana, 2000). The idea with this system is to escape the degeneration of education into mindless book learning (Hegarty 1976) and hence obtain technical knowledge, which will enable them to offer the best practical service to clients. In this case distinguish between good work and bad work and be encouraged to do the former (Schumacher 1977).

The system of education includes a formal system of training in a Technical school and Polytechnic where after successful passage through the levels of training (Intermediate level - Advanced level grade 1) one obtains the City and Guild certificate at those various levels. The emphasis here is practical training and hence the professional who goes through this system is made capable to play his/her role with full understanding of current construction practices applied.

The quantity surveyor is a necessary resource professional for any country. His role to the national economy cannot be overemphasized for example when one considers the provision of infrastructure to meet the Ghana Government's initiative to achieve middle income level status by the year 2020.

BASIC EDUCATION

In Ghana, children spend nine (9) years from Nursery through the Primary school. From 1987 the emphasis has been on "Basic" education. What this means is that education is compulsory and free for children from the ages of 6 to 15. The old system, which offered up to twelve years of primary education, followed by five years of secondary

school (at the end of which pupils took the West African Examinations Council's GCE "O" Levels) and two-year of sixth form (ending with the WAEC's GCE "A" Levels), was phased out.

At the basic level, the new system consists of six years primary education and three years of junior secondary school, at the end of which pupils sit for the Basic Education Certificate Examination (BECE).

This Education Reform Programme launched in 1987 changed the structure of the education system from the former statutory 17 years of pre-university schooling to 12 years. English is the medium of instruction in all schools in Ghana. Ghana has 12,130 primary schools, 5,450 junior secondary schools, 503 senior secondary schools, 21 training colleges, 18 technical institutions, two (2) diploma-awarding institutions and 11 universities serving a population of about 20 million; this means that most Ghanaians have relatively easy access to good education in contrast to the time of independence in 1957 (Ministry of Education)

SECONDARY EDUCATION

The junior secondary school education can be followed by three years' senior

secondary education at the end of which students take the Senior Secondary School Certificate Examination (SSSCE). Other alternatives include attending a technical or vocational institution or joining the labour market.

The average age range of students in the Senior Secondary School is 14 - 19 years.

CONTENTS OF CURRICULUM

The Senior Secondary School curriculum comprises Core subjects and Elective subjects. Every student offers the four core subjects, which are: English Language, Mathematics, Integrated Science (including Science, Agriculture and Environmental Studies) and Social Studies (formerly Life Skills and embracing Economics, Geography, History and Government).

In addition to the Core subjects, students are required to offer at least three electives from a particular programme. There are five programmes namely: Agriculture Programme, General Programme (Arts or Science option), Business Programme, Vocational Programme and Technical Programme. A choice of the General and Technical programme is prerequisite for the Quantity Surveying profession.

The new Education Reform Programme has been designed to be practically oriented with skills development from the JSS level through SSS up to tertiary level. The necessary skills inculcated in the pupil whose attention was much directed towards Social studies and the Sciences veers him /her towards the Quantity Surveying direction.

SKILL DEVELOPMENT

At the completion of basic education, the pupils should have been exposed to technical and vocational skills, which should later be improved upon in vocational schools, technical institutes, secondary, technical school, polytechnic or university levels. However, this concept has still not been fully put into practice.

The content of the vocational and technical subjects (in JSS and SSS) and courses (in technical institutes) continues to be almost all theoretical with little or no practical activity.

A major deficiency in the Education Reform Programme is the lack of skills development even if at varying levels of emphasis. The lack of teaching/learning time allocation and resources as well as that of qualified and experienced technical/vocational teachers are the

major causes of this deficiency. Another major drawback is the lack of linkages between the different levels of education.

TECHNICAL AND VOCATIONAL EDUCATION

Aspiring Quantity Surveyors can pursue technical education at any of the following institutions: secondary technical schools, vocational centers, polytechnics, technical institutes and technical teacher education colleges and universities. Technical institutes offer several programs: pre-technical courses, general technical courses and craft courses.

The general Technical courses offered in Engineering Technology and Building, require two-years of full-time study and a Pre-technical course. The craft courses also offered in Engineering Technology and Building, take two years to complete and lead to examinations of the City and Guilds of London Institute awards or local examinations. Graduates of the craft courses then can go on to apprenticeships or to the Polytechnics for advanced craft courses.

Polytechnics offer programs leading to the City and Guilds of London Institute overseas awards of the Ordinary

Technician Diploma (OTD), which requires two years of study. The Higher Technician Diploma requires a further two years of study following the OTD. Graduates of these programs are qualified to work in local industry. Specialized post-secondary technical institutions include Ghana Institute of Management and Public Administration (GIMPA) and Institute of Professional Studies (IPS).

TERTIARY EDUCATION

Higher education in Ghana is provided by Universities, University colleges, polytechnics and pre-service training institutes. All institutions of higher education fall under the jurisdiction of the National Council for Tertiary Education, which is administered by the Ministry of Education. The polytechnics are currently being upgraded and will soon be authorized to offer university-level courses, in this regard with the offer of a Bachelor of Science on completion.

Entrance requirements for Bachelor degree programs were five credits at “O” level, plus two or three “A” levels under the old system. For applicants who have taken the Senior Secondary Certificate Examination under the current system, a University Entrance Examination may

be required. The Mature Students Entrance Examination is an alternative admission requirement for members of the industry who might have risen up through craft courses pursued at the Polytechnic level.

Bachelor degree programs at the University of Science and Technology take four years.

POLYTECHNIC EDUCATION

Every Government sees polytechnics as critical to the knowledge society. Far too often the focus of discussion of the knowledge society has been exclusively on a handful of scientists and managers who are seen as making the key decisions for developing the economy.

The role of polytechnics in Ghana reflects the definition given to Polytechnic Education, which emphasizes diversity, vocational training and promoting community learning. The object of integrating Polytechnic training with on-site training is to achieve a national benchmark of skill level for tradesmen coming into the industry. For every polytechnic these should take precedence over the provision of the sort of degree programmes that aim to emulate or compete with the universities.

The definition of a Polytechnic clearly identifies the role of polytechnics as covering a broad range of activities – including research (and particularly applied and technological research), a provider using the protected term ‘polytechnic’ or ‘institute of technology’ have its activities classified as: comprehensive teaching; community education and training; and/or industry or professional education and training (in at least four fields).

In addition, a polytechnic or institute of technology might also have some of its activities classified as:

- learning and assessment support;
- specialist teaching; and/or
- specialist teaching and research (in areas where the polytechnic or institute of technology offers post-graduate programmes).

The polytechnics were created to focus their efforts on their areas of specialisation, and hence discouraged from undertaking activities that are more effectively carried out by other providers. The Polytechnics in the country offer a wide range of courses which have varied application in the construction industry especially in the field of Quantity Surveying.

Charge Hand/Sub Foreman, Contract Foreman, Contracts Supervisor, Project Management, Estimating and Quantity Surveying become the roles into which the Polytechnic seeks to model its students. Training courses in management skills, dispute resolution, basic planning and programming skills inculcates the proven ability and skill at working to deadlines and construction programmes, liaising with and organising sub-contractors, problem solving and decision-making. The future Quantity Surveyor at the Polytechnic level obtains knowledge of the realities of the industry and obtains skills in computer and analytical, negotiation, arbitration and mediation skills.

UNIVERSITY EDUCATION

University education in Quantity Surveying is mainly provided by the Kwame Nkrumah University of Science and Technology. The Department of Building Technology of the Faculty of Environmental and Development studies has the responsibility of training qualified persons in the discipline of Quantity Surveying.

The Department started producing graduates in 1966. The course structure prepared then allowed for graduation in either of two options. The first was the

Quantity Surveying option and the second, the Building Management option. It was realized after a few years however that there was a drift towards the Quantity Surveying option. Majority of the candidates, about 80% – 90%, opted for Quantity Surveying. Those who chose the other alternative later on became participants of the Quantity Surveying option. A merger of both options to create the required balance was considered after careful thought.

The general courses offered included Materials and Construction, Theory of Structures, Measurement of Construction works, Building management, Laboratory/ Workshop practice, Contract Administration and Professional Practice, Building Maintenance, and Building Economics.

The Quantity Surveying option at the final year level involved basically an advanced quantity surveying course. The Building Management option involved a course in Quantitative Techniques in Management. Other such elective courses included Advanced Construction Technology and Advanced Building Structures. Students, in partial requirement for the completion of the course, were required to identify, investigate and prepare reports on

current problems in the construction industry.

The merging of the options however did not come without any disadvantage. The in-depth knowledge associated with specialization and the emphasis required for careful detail to specifics became absent. The idea now is to consider making either of the options Bachelor of Science degree course.

The department has since its inception graduated over 450 high-level personnel for the construction industry in Ghana. Out of this only a handful have had the opportunity of undertaking postgraduate studies- mainly in universities overseas at considerable cost to the Ghanaian tax payer. (MSc. Construction Management Brochure). A Master's programme has therefore been established to assist many graduates to realize their goals of furthering their studies.

MASTER'S PROGRAMME

The programme is an MSc. Course in Construction Management. The course commenced in 1997. The diagram below illustrates the course structure.

First two semesters	Last two or four semester
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Lectures/ Exams	Project work.
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A systematic study of the construction cycle is achieved in the first two semesters with lectures and tutorials and course works. The incorporation of seminars also encourages the exchange of ideas between course participants. Written examination at the end of each semester of the first year and a continuous assessment of course work is basis for assessment. The Project work is undertaken as a research work leading to an externally and internally examinable thesis. The thesis always requires oral defense.

The timing for the project work is either full time where the participant stays on campus and completes his project in one year of continuous study. Or else the student can return to normal employment at the end of the first year taught course and undertake the project over a two-year period.

The courses taught include Managerial Economics, Project Resource Management, Computer Applications, Statistical Methods, Operational research, Marketing, Research Methodology, Project Administration, Project cost Management, Project

Planning and Control and Construction law.

It is opened to Architects, Civil Engineers, Quantity Surveyors and Building Technologists.

MEMBERSHIP OF GHANA INSTITUTION OF SURVEYORS; ENTRY REQUIREMENTS

Entry into corporate membership of the Ghana Institution of Surveyors is regulated by a test on “Practical Application of Quantities”. The test comprises four written papers in the areas of:

- Measurement;
- Building Economics;
- Professional Practice procedure; and
- Building Contracts, Claims and Arbitration

A candidate must score an average of 55 marks and not less than 45 marks in any of the four papers. The conditions set for eligibility are that he/she must register first as a probationer with the institution and then undergo training in an approved office for two years after he/she has completed his/ her National Service.

The syllabus offers three other alternative routes towards membership.

They are:

OPTION 1

Stage 1: Register as a student (Have credits in five subjects) two of which must be Advanced levels; Mathematics or Science and English inclusive;

OR

In case of Technician, one Advanced Level

Stage 2: Take Intermediate Examination

Stage 3: Take Final Examination

Stage 4: Take Test of Professional Competence (Candidate to fill Log Book Working 3 years in an approved office and answer a practical problem related to the aspect of professional practice).

The Intermediary/Final Examination including written tests in Construction Technology, Construction Management/ Economics, Construction/ Valuation and Law/ Arbitration.

OPTION 2

Direct Membership Option – Candidates must be 35 years or over and with 15 years experience and who in the opinion of Council have attained a broad range of Quantity Surveying experience in majority of the following areas: -

- a) Design Cost Advice and Cost Planning
- b) Pre-contract work
- c) Early Advice to Clients

If accepted, the Candidate shall take a written examination in: -

- a) Tendering and Pricing
- b) Construction Cost Management
- c) Organisation Management and Finance
- d) Law and Arbitration

On being successful he shall enroll for the Test of Professional competence, which is same as for Option 1.

OPTION 3

Council granting full exemption to candidate with Diplomas/ Degrees from accredited Institutions. This candidate enters only for the test of Professional Competence.

The Institution regards graduates from the Polytechnics as Technicians. The implementation of a new syllabus compiled by the Council of the Institution, however, could create the opportunity for the Polytechnic graduate to become a corporate member of the Institution.

ROLE OF THE QUANTITY SURVEYOR

A Major reform of the structure of Royal Institute of Chartered Surveyors (RICS) of which the Ghana Institution of Surveyors (GhIS) is a member in 2001 brought an end to the traditional 7 divisions of membership, which were

- Building Surveying
- General Practice
- Geomatics (Formerly Land And Hydrographic Survey)
- Minerals And Environmental Management
- Planning And Development
- Quantity Surveying
- Rural

An RICS report identified the Core Skills and Knowledge Base of The Quantity Surveyor (1992) to include

- Construction technology
- Measurement rules and conventions
- Construction economics
- Financial management
- Business administration
- Construction law

The report also identified a skill base that included: -

- Management
- Documentation
- Analysis
- Appraisal
- Quantification

- Synthesis
- Communication

- Construction Cost And Price Forecasting
- Procurement Advice
- Contract Administration

Measurement which for some years ago was the foremost discipline is now no longer considered a core skill but rather responsible for unique analytical abilities. It became considered as a technical process that underlies all QS functions. Measurement itself however was found to rely more on a comprehensive understanding of the subjects listed above, rather than standing as an academic subject in its own right.

There are two kinds of Quantity Surveyors. They are the Client's QS and the Contractor's QS. The responsibilities of the client's QS include the preparation of Bills of Quantities and the giving of advice on what a project would cost. He/she also does cost planning during the design stage of a project, examines tenders, prices quantities and reports his/her findings. S/he also negotiates rates with contractor on negotiated contracts, valuing work in

The distinctive skill of a Quantity Surveyor lies in his/her ability to analyse a project using the above knowledge and apply it to the following areas: -

progress and making recommendations as to payments to be made to the contractor including advising on the financial aspects of variations. The object of study of Quantity surveying also enables one to prepare final accounts on completion of final contract works and also give advice on the financial and contractual aspects of contractor's claims.

The Contractor's Quantity surveyor on the other hand engages him or herself in the preparation of BOQ's for small contracts, agrees on measurements with the client's contractor for any specific project. He also collects information about cost of various operations or method of construction from which the contractor can prepare future estimates.

The contractor's QS also assist in the preparation of production bonus schemes and also does cost control at the construction stage based on the budget and actual cost. This is done in a bid to know possible effects on cash flow of discrepancies that may arise between the actual and the budgeted. Finally he/she also prepares the project report and

assists the contractor in his management scheduling plans.

CONCLUSION

Our learning institutions are key centers for developing and fostering the necessary manpower needed to achieve a better society. The Quantity surveying profession is crucial to achieving a better society as the role of the Quantity surveyor is directly linked to the provision of a particular basic human need – shelter. The training outlined above will ensure that the QS is effective in the provision of services required of him.

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