

MANDATORY CONTINUING PROFESSIONAL DEVELOPMENT PROGRAMME FOR SURVEYORS IN NIGERIA

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Key words:

ABSTRACT

The advances in the field of computers, digital and communication technologies have changed the way most professions are practised including surveying. In the field of surveying the advent of Geographic Information System and Satellite Positioning Systems have revolutionised the practice of the profession particularly in the areas of data acquisition, data processing, data analysis, data management and storage. These developments have direct consequence on the law, ethics, practice and boundary of the profession.

These developments have compelled the Nigerian Institution of Surveyors (NIS) to institute a Mandatory Continuing Professional Development (MCPD) Programme aimed at exposing the members to current developments in the field of Surveying and Geoinformation. The programme covers the broad areas of basic computing, geoinformation technologies, professional discipline, ethics and environment. There is also a provision for the modification of the content of the programme as and when the need arises. The programme has been on for almost two years and has attracted strong support from surveyors and a few from allied profession. This strong interest is believed to be due to a desire to acquire geoinformatics knowledge and the fact that the institution is insisting that registration and re-registration will be dependent on attracting a minimum number of credits at the MCPD.

1. INTRODUCTION

The advances in computers, digital technology, satellite positioning and imaging, and the important tools of geographic information systems are fast changing the practice of traditional surveying. Unfortunately, many surveyors lack the interest to venture into these emerging areas. Many are generally conservative and so do not respond fast to changing situations. Nigeria is endowed with abundant human resources in mapping and surveying but the surveyors have become largely out - dated because they are not conversant with the new developments due to lack of continuous professional development. The main reasons for this state of affairs are the political and economic situation in Nigeria between 1984 and 1999, which had led to a high degree of isolation from international contacts and interactions (Fajemirokun & Nwilo,2000). With the new democratic dispensation, the efforts of the Nigerian Institution of Surveyors (NIS) and some of the higher institutions, it is hoped that the situation will improve.

1.1 Technological Development and change in Surveying Practice

Surveying practices have been particularly affected by technological developments during the past 50 years. In the 1950's, 60's, and 70's, technological developments contributed to significant changes in the surveying profession. Notables among these developments are as given by Earl (1999) as follows:

- During the early 1950's, the electronic computer became a practical tool for numerical calculations.
- The Russians launched Sputnik I in October 1957 and the US, not to be outdone, renewed a national commitment to science and mathematics education.
- Professor C.L. Miller invented coordinate geometry (COGO) in 1959.
- During the 50's and 60's, photogrammetric mapping evolved as the standard mapping tool for large engineering projects (i.e. the interstate system).
- The Transit Doppler satellite surveying system became operational in 1964 and was declassified for civilian use in 1967.
- The US space program placed a man on the moon in July 1969.
- The hand - held scientific calculator became commercially available in the early 1970's. Next the calculator became programmable and then a data collector.
- The electronic distance meter (EDM) became the instrument of choice for many surveyors during the 1970's.
- Modernisation of Land Data Systems (MOLDS) conferences were held during the 1970's to study ways of storing land records in computer databases. The concept later evolved into the modern geographic information system (GIS).
- The first GPS satellite was launched in February 1978, over 23 years ago.

This rate of change has accelerated even more during the 1980's and 1990's with developments in the Personal Computer (PC). The arrival of three new technologies namely, the Global Positioning System (GPS), Geographic Information System (GIS) and the World Wide Web (WWW), have revolutionised professional practices, including surveying.

The practice of surveying has attained a high level of sophistication not only in instrumentation but also in techniques and software development. Concepts such as database and geoinformation are now being used in the profession. Conventional techniques and instruments have been transformed from analogue to digital and this has increased productivity. With modern equipment, collection of spatial data (surveying measurements) is less intensive now than it was about a decade ago. In addition to the conventional methods of data collection, spatial data are now collected using tools such as global positioning systems (GPS), satellite imagery, and total - station instruments. Spatial data are routinely stored, manipulated, analysed and presented in a GIS environment or are displayed and plotted as maps or 3-D renderings by other various data visualisation routines. Electronic media makes it possible to store enormous quantities of digital spatial data quite economically, and because spatial data are available and are relatively inexpensive, spatial data applications based upon Geographic Information Systems (GIS) are now found in many disciplines.

1.2 Brief History of the Surveying Profession In Nigeria

Surveying is one of the oldest professions in Nigeria. It has been practised in the country even before the amalgamation of Northern and Southern protectorates in 1914. For example, a map of the old Calabar town was produced on a scale of 1/930,000 by the Presbyterian Church as far as 1868 (Ayeni, 1981). Also, survey departments existed in Lagos and Kaduna as early as 1899 and 1900 respectively. The activities of these departments were mostly cadastral surveys. The discovery of tin ore in Jos in 1912 and the boom in agricultural activities in Kano provided the necessary rationale for carrying out cadastral surveys (Okoronkwo, 1984; Fajemirokun & Nwilo, 1994, 1996). The first system of levels in Nigeria was observed in 1891 while the first system of levelling for vertical controls in Nigeria started in 1920 and continued up to 1945 (Fajemirokun & Nwilo, 1990; Ebong, 1981).

Before the three political regions were created in the early fifties, the surveying profession was practised in the country under one umbrella of Nigeria Surveys with headquarters in Lagos and sub – headquarters in Ibadan, Enugu, and Kaduna. All surveys for cadastral, topographical, trigonometric and geodetic purposes were carried out under the direction of the Federal Surveys in Lagos.

The Survey system that is being practised in the country today was established after the Nigerian independence in 1960 when the indigenous surveyors began to take over the survey offices gradually from the whites. The system had its headquarters in Lagos and regional survey departments existed in each of the three regions of the country with their headquarters in Kaduna, Enugu and Ibadan. These regional departments later graduated into state survey departments as states emerged from these regions.

In its early stage, the profession was exclusively for the colonial administration. Members of the administration from the district officer upward were expected to possess basic knowledge of surveying to facilitate the administration of the colony.

The profession has witnessed changes in technologies over the years, from the use of chains and tapes to the use of electromagnetic distance measuring (EDM) instruments and now to the evolution of satellite systems. Surveying practices in Nigeria is changing rapidly and the response of the surveyors to the change is rather too slow. In its early form, data processing in the profession was a rather boring and tedious exercise. With the advent of the calculator, one could compute and adjust a traverse a little faster (a task now measured in minutes or even seconds). Data management was done manually using different filing systems to keep the records in the offices.

1.3 The Growth and Development of the Surveying Profession in Nigeria

The growth and development of the surveying profession in Nigeria could be viewed from two perspectives. These are educational development and professional development.

1.3.1 Educational Development

Presently, Nigeria has about 9 Universities and a College of Technology, 16 Polytechnics and a monotechnic offering surveying courses. These Universities include University of Lagos, Lagos, Ahmadu Bello University, Zaria, Universities of Technology, Minna and Yola, Universities of Science and Technology, Port Harcourt and Enugu, the Universities of Uyo, Uyo, Nnamdi Azikiwe University, Awka, and Abubakar Tafawa Balewa University, Bauchi. Admission is by the Joint Admissions and Matriculation Board (JAMB) after passing the Senior Secondary School Certificate Examinations. These universities are responsible for developing programmes in surveying at the undergraduate and graduates levels in the country.

The training of survey technicians and technologists in the country is done in the polytechnics. Apart from the Federal Survey School, the country has 16 Polytechnics and Colleges of Technology offering surveying at National Diploma level of which 13 are accredited at Ordinary National Diploma (OND) level. It is only the Federal School of Surveying, Oyo and the Kaduna Polytechnic, Kaduna that are accredited at the Higher National Diploma (HND) level.

The first effort at training surveyors at a formal level started in 1908 with the establishment of what is now regarded as the Federal School of Surveying, Oyo. The school was first located in Lagos from where it was moved to Ibadan in 1927 and from there to Oyo in 1935. When the Yaba College of Technology was established around 1932 as the highest institution in Nigeria, a provision was made for prospective surveyors to undergo basic educational studies in the institution for two years, followed by two years of surveying at the Survey School, Oyo (as it was formerly known). Successful candidates were subsequently awarded diploma of the College. The first exposure to university education came in 1947 when the first university in the country was established as the University College of Ibadan. The programme was later discontinued following the change in policy of the colonial administration. The University of Nigeria, Enugu Campus was the first university in Nigeria to offer a degree programme in surveying with effect from 1962. This was followed by the University of Lagos, Lagos and Ahmadu Bello University, Zaria in early seventies.

1.3.2 Professional Development

Two bodies are responsible for regulating surveying practice in Nigeria and these are the Nigeria Institution of Surveyors (NIS) and the Surveyors Registration Council of Nigeria (SURCON). SURCON is a statutory body that is responsible for the registration of people to practice surveying within the country, and the maintenance of discipline within the profession. The NIS, on the other hand, is the professional association that brings together all surveyors including pupil surveyors, survey technologists, technicians, and students within the country. This institution fought tirelessly for the birth of SURCON and finally succeeded in 1989. Prior to SURCON was the Licensing Board which played a similar role to SURCON. The NIS could be regarded as the father of SURCON because it was the

effort of the NIS that led to the replacement of the Licensing Board with SURCON. Further details are in Fajemirokun & Nwilo (1994).

2. THE NEED FOR CONTINUING PROFESSIONAL DEVELOPMENT IN SURVEYING

In the past, the work of a surveyor in Nigeria was restricted to acquisition and processing of data. Development in the field of Information Technology, satellite technology and computers have led to the realisation of the importance of data management and information presentation in surveying in a manner hitherto unknown. Access to large spatial data and information has made it imperative for surveyors to use large computer space for the storage and management of data. Data can now be put to several other uses apart from the purpose for which it was originally collected. For example, provision of controls for the mapping of a coastal state could reveal information on rates of coastal erosion in that stretch of the coastline. Although monitoring coastal erosion was not the primary objective, yet that could be inferred from the information gathered.

Surveyors are supposed to be experts in spatial and time dependent systems but many lack the interest to venture into these emerging areas. Many of them are generally conservative and so do not respond fast to changing situations. As surveying products are becoming more and more sophisticated the role of the surveyors need redefinition. There is therefore a need for a new approach to training of surveyors if they must meet the needs of the present dispensation. This has also led to the need to retrain the already trained manpower. It is in the light of the above that some educational institutions had to modify their curricula and the NIS developed a Mandatory Professional programme. The details of the course contents of the new surveying programme at higher institutions have been discussed in Fajemirokun et al (2000).

2.1 The NIS Mandatory Continuing Professional Development Programme (MCPD) in Surveying

This programme was designed by the Nigerian Institution of Surveyors (NIS) for surveyors to continually update their knowledge and technical skills in order to remain competent and to keep abreast of current developments in surveying and Geoinformatics. The programme is therefore, a skill renewal process, and a channel for knowledge acquisition through training and retraining. It was felt that the impact of training will be validated by the increased professionalism that participants bring to bear on their jobs after the courses. The principal objectives of the programme are:

- i) To demonstrate the Institution's responsiveness to national needs by encouraging members of the surveying profession to have adequate current technical knowledge and skill in the drive towards maintaining professional excellence and confidence at all times.
- ii) To assist members of the profession to adapt to the evolution of new techniques, changing responsibilities and economic conditions nationally and internationally;

- iii) To ensure that the competence and relevance of surveyors in today's economic, and socio/political environment in the country is maintained.
- iv) To prepare surveyors for inter and intra professional competitiveness, and
- v) To assist surveyors discover new frontiers of opportunities open to them in this information age (NIS, 2000).

In designing the programme, the target audience was the members of the Nigerian Institution of Surveyors. The programme is mandatory for all surveyors in Nigeria and is a pre-requisite for re-registration as Surveyors by SURCON. New entrants into the profession are expected to have met the minimum annual number of credits. The programme is now also a pre – requisite for advancement within the membership cadres of the Nigerian Institution of Surveyors. Members who are medically certified as unfit and members on special national or state assignments are exempted from the programme. The MCPD programme is geared towards the enhancement of members' knowledge and professional competence through structured courses initiated, organised or approved by the institution. It is evident from the above that members can gain credits through other courses other than those organised by the institution provided that such courses are approved by the institution and fall within the broad areas of structured courses such as:

- i) Information Technology and Management;
- ii) Professional Ethics, improvement of professional image and expansion of professional boundaries;
- iii) Procedures in practice of Surveying and Geo-informatics including Project Initiation and Management, Project Reporting and Documentation;
- iv) Legal issues: Copy right, contracting, consulting, Professional Indemnity, Insurance, etc;
- v) Application and development of scale of fees and related issues;
- vi) Survey Components in Engineering Projects;
- vii) Survey Components of Physical Planning;
- viii) Environment and Environmental Management issues;
- ix) New areas of professional practices (NIS, 2000).

The institution has approved that members shall fully attend and participate in the programme and achieve a minimum of 50% of total credit hours per year in line with guidelines, as a condition for continued membership and professional registration.

Accordingly, attendance in person (not by proxy) and full participation in the activities listed below will qualify participants for specific credit hours. To attract credits points for the MCPD programme, a member can attend structured courses organised by:

- NIS, NIS/SURCON , or SURCON; or
- conferences, seminars or courses organised by Universities, Polytechnics and professional firms of Registered Surveyors approved by the Institution; or
- participation in some selected Institution's activities; or
- courses organised by other recognised professional bodies and organisations approved by the institution; or
- Specialist Courses; or

- Executive Courses; or
- In-Plant Courses/Seminars; or
- Annual general meeting of the institution; or
- Branch NIS MCPD programmes; or
- The Olumide Memorial Lecture, 50% of branch meetings; or
- Serve as an examiner in NIS/SURCON organised examinations and from publications in learned conferences and journals.

The details of the principles, contents, credit hours and other matters pertaining to the MCPD programme is in NIS (2000).

2.2 Implementation of the NIS MCPD Programme

The MCPD programme is managed by the MCPD Committee, which reports directly to the President of the institution. To achieve the objectives of the MCPD programme and to ensure that members have easy access to the NIS organised structured training programmes, the country has been organised into three zones. The zones are: the south west zone with the headquarters in Lagos, the south east zone with the headquarters in Enugu, and the northern zone with the headquarters in Kaduna. It is mandatory that all the programmes be held at the zonal headquarters. Apart from the zones, training programme can be organised at the branches provided that the branch can meet the conditions stipulated by the committee.

Since the introduction of the MCPD programme in 2000, the major area that has been addressed is the area of geoinformation technology. This was divided into two major components namely: Geoinformation Technology Part I and Geoinformation Technology Part II. The contents included but not limited to computer appreciation, historical development of computers, database management, data acquisition systems by ground survey methods, digitisation, photogrammetric and remote sensing methods. Part I was held in 5 centres which included all the 3 zonal headquarters. Part II has been held in 2 zonal headquarters but must be completed by the end of the year.

To run the programmes, resource persons and facilities were from members of the institution that are knowledgeable in the areas being addressed, while a few came from outside the profession. Equipment were rented from institution of learning, and the private sector where the equipment is not readily available in the institution of learning.

2.3 Experiences so far

As stated earlier, the MCPD lectures have been held in 5 locations within the last twenty months since the programme came into existence. The attendance has been very encouraging. The maximum attendance recorded so far was 120 while the minimum was 20. After each programme, participants were expected to evaluate the quality of the programme. The evaluation was to take into consideration issues such as the quality of the course materials, presentation of the lectures, ability of the lectures to meet their individual expectations, other areas that they expect the lectures to cover but were not covered, and

their future expectations. The participants have scored the lectures very high and have been very grateful to the institution for mounting such a programme at a highly subsidised rate.

The high level of attendance have been generally attributed to interest by members, quality of the lectures and lecturers, and the stringent disciplinary conditions embedded in the programme by the institution. The programme has also assisted the institution in recording a much higher attendance at the annual general meeting and other meetings, and meeting of financial obligation by members to the institutions. It will be right to say that members have shown stronger stake in the institution. This state of development has also assisted the institution in meeting its membership commitment to international organisation. Also, the programme has made most of the participants to be computer literate and to develop an interest in geoinformation technology and has impacted positively the perception of surveyors. Furthermore, the admission to the different cadres of the membership of the institution has increased.

3. CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

The MCPD programme has lasted close to two years now and has attracted so much interest from the members of the institution. The programme was introduced essentially to assist members to be up – to - date in current development that affect the profession. The programme has so far been held in 5 locations and the courses consist of mainly the area of geoinformation technology.

The members' interest in the programme has been attributed to a general interest for knowledge, quality of lectures and lecturers, cost of the lectures and penalties for failure to participate. Participation at the institution's activities have been improved, members have shown greater interest in meeting their financial obligations to the institution. The current situation has assisted the institution in meeting its membership obligation to international association.

3.2 Recommendations

The MCPD programme has impacted positively on the Nigerian Institution of surveyors. From the experiences of the institution, the following recommendations are made:

- (i) Other surveying institutions within the FIG should emulate this programme and mount similar programmes for their members. This will assist their members to keep abreast with developments within the profession.
- (ii) The course fees should be, as much as possible, cheap so as to attract members' interest in such programmes.
- (iii) Other institutions that have mounted similar programmes should share their experiences with the members of the FIG, possibly through newsletters.
- (iv) The possibility of managing similar programmes through the Internet especially for developed countries should be explored if that is not yet done.

- (v) Institutions in developed countries should through the organs of the FIG assist the developing countries institutions in mounting such programmes through provision of teaching aids and course materials.

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BIOGRAPHICAL NOTES

Dr. Peter C. Nwilo is a senior lecturer in the Department of Surveying and Geoinformatics, University of Lagos, Akoka - Lagos. He has over 48 papers in journals, conference proceedings and seminars. He has published extensively in the areas of coastal management, GIS applications, and curriculum development in surveying and geoinformatics, GIS laws, etc. He has B.Sc. and M.Sc. degrees in Surveying from the University of Lagos and a Ph.D. degree in Environmental Resources from the University of Salford, UK.

Dr. Nwilo is a surveyor with a strong interest in coastal/environmental management. His Ph.D. thesis was on "sea level variation and the impact along the coastal areas of Nigeria". This thesis is a very useful contribution to the understanding of coastal processes along the coast of Nigeria.

Dr. Nwilo is a member in the editorial board of a number of journals and papers such as the journal of Environmental Education and Information. He is a member of the University of Lagos Senate and several university committees. He has attracted several research and teaching facilities to the university.

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