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Supervisory and Inspectorate Services: Implications for Science Instruction in the 6-3-3-4 Educational Programme

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Supervision and inspection are often used interchangeably in the management and administrative process. In spite of the important reasons for inspectorate services as documented in the National Policy on Education (NPE), the federal and state divisions of the ministries of education are yet to assume their rightful place in the overall supervision of Nigerian secondary schools.

There is a need for understanding between the officers of the inspectorate divisions and those of the school administrators for effective school supervision.

This paper aims at analysing specifically the importance of effective supervision and regular inspection of Nigerian secondary schools in order to bring about the successful implementation of the science curriculum of the 6-3-3-4 educational programme.

The major change in the 6-3-3-4 programme is that the secondary school would now be a two-tier system which would make up three years on the Junior Secondary School (JSS) at which both prevocational, academic and technical subjects would be offered and the Senior Secondary School (SSS) where students would offer academic subjects only (NPE, 1981). However, of all the innovations contained in the package, the most significant, if not fundamental, is the major modification that has been made to the curriculum. In recent years, there has been a great deal of debate on what is taught in schools and as a result, a knowledge of science and more recently, technology, has assumed a conspicuous status in the school curriculum. This system has called for the use of modern instructional materials as teaching aids to facilitate learning at the junior and senior secondary school levels for both the prevocational and academic training. In order to cope with these demands, supervision and regular inspection of schools is crucial in ensuring the the successful implementation of the several innovations contained in the 6-3-3-4 package.

This paper aims at discussing specifically the importance of school supervision and inspectorate services in the successful implementation of the science curriculum in Nigerian secondary schools. Also, a paper of this nature is welcomed at a time when the performance of our secondary school pupils has continued to remain poor especially in the sciences which should be the bedrock of the most desired technological advancement (Aghenta, 1982).
Supervision and inspection as inseparable phases of administration

Supervision and inspection are often used interchangeably in the management and administrative processes. Supervision is known as general management, direction or control, and inspection is referred to as the action of reading through for correction and revision by a superior authority. Both supervision and inspection are also viewed as phases of administration and inspection that focus primarily on the achievement of the appropriate instructional expectations of the educational system (Oxford English Dictionary; Ogunsaju, 1982).

The principal’s supervisory role may be viewed from two perspectives:

1. Supervisory duties that directly affect the academic programme of the school, thus the quality of instruction; and
2. Supervisory duties that border on general administration of the school programme which would consequently affect the academic programme.

Supervisory duties which affect the academic performance of the learners should be given the utmost attention. Therefore, several measures should be taken through delegation of duties via his subordinates, namely his vice-principal or vice-principals, class co-ordinators, class teachers and subject teachers in order for that goal to be achieved (Lawal, 1982). The principal should, therefore, supervise the following areas thoroughly: (a) The approved syllabus, (b) The schemes and records of work, (c) The time-table, (d) The school library, and (e) Recommended textbooks and teachers’ guides.

Delegation of duties in this respect cannot be over-emphasized since the principal cannot be everywhere at the same time. The following procedures should be taken into consideration by the principal: (a) Staff meetings, (b) School examinations, (c) Discipline in the school, (d) Parents’-teachers’ association, and (e) Record keeping.

Perhaps it would not be out of place to consider first the need for inspectorate services in the 6-3-3-4 educational programme. As part of the national education plan, the following is stated in the NPE:

Government control of secondary schools will involve regulating the opening of schools, supervising and inspecting all schools regularly and ensuring the provision of well qualified teaching staff, and generally ensuring that all schools follow government approved curricula and conform to the National Policy on Education (1981:19).

From the above statement, the need for school supervision and inspection is apparent and has legal backing because it has been categorically stated in the country’s educational policy. Therefore, reasons for inspectorate services may be considered as follows:

a. To ensure that the aims, objectives and intentions of the 6-3-3-4 curriculum developers are translated into reality.

b. The teacher being the central figure in the whole educational programmes, 6-3-3-4 inclusive, has to be given constant guide and encouragement through the services of the inspectorate division of the ministries to ensure that his perception of what is required is in conformity with the objectives and aims of the 6-3-3-4 implementation committee and the nation’s aspirations concerning education. This, of course, implies that inspection would bring about improvement in the effectiveness of the teacher so that he can contribute maximally to the attainment of the system’s goals (Adesina, 1981).
c. To unmask undesirable and defective procedures of methodology that may not be immediately apparent to the school authority and might have escaped the ‘supervisory eye’ of the school principal or his appointee.

d. Sometimes, an inspection may be necessary when a new school is being registered for an external examination such as that of the West African Examinations Council (WAEC) for the first time. That is, a recognition inspection to ensure that the academic programme of the school is of the required standard.

e. At other times, an inspection of an old school may be necessary if the results of the school over the years had continued to be below expectation.

In spite of these important reasons for inspectorate services, it would appear that both federal and state divisions of the ministries of education are yet to assume their rightful place in the overall supervision of our secondary schools.

The science inspector: what does he look for during an inspection exercise?

Unlike school supervision conducted within the school setting by the principal, the science inspector is more specific in his supervision. The responsibility of the science inspector is to scrutinize and examine carefully how science subjects are taught in the school. Thus, he is charged with the duty of making sure that the science curriculum of the 6-3-3-4 educational programme is being implemented. He is called upon because of his vast experience both in and outside the classroom in his subject area to assist his colleagues in the teaching profession in order to achieve the educational goals of the nation.

Firstly, since his inspection is concerned with the science curriculum in all its ramifications, the four components of the curriculum must be borne in mind during the inspection exercise. These areas are:

1. The aims and objectives of science teaching as laid down in the NPE, which must be reflected in the type of instruction given to students in that school.
2. The content or subject matter of the science subjects which must be adequate, relevant and suitable for the particular age group and in conformity with the nation’s aspirations and needs as stated in the policy and syllabus.
3. The methodology which is employed in passing knowledge on subject matter to the learner and the effective use of the instructional aids.
4. Evaluation of science instruction to ensure that the desired result is being achieved.

Additionally, a science inspector may be expected to inspect one or two science subjects thus, he must possess the basic knowledge of science and must know what he is to inspect. The following areas must be well scrutinized and documents well examined in order to ensure that science instruction meets the needs of the learners: (a) The approved syllabuses for jss and sss; (b) The schemes and record of work books; (c) Classroom supervision; (d) Records of students’ academic progress; (e) Laboratory stock book; (f) Visitor’s book; (g) The laboratories for practical work in integrated science, physics, chemistry and biology.

In general, a science laboratory should have the following provided by the ministry of education or school board: (i) Water; (ii) Drainages; (iii) Gas; (iv) Electricity; (v) Adequate Ventilation and lighting; (vi) A preparatory room and a store for keeping equipment and instructional aids; (vii) The basic science equipment and apparatus as applicable to the particular laboratory; (viii) A demonstration bench and a one-sided arrangement of
students' benches for the biology and physics laboratories; and a double-sided bench arrangement for the chemistry laboratory; (ix) A dark room if it is a physics laboratory; (x) Chalkboards and stools for students; and (xi) Laboratory safety devices—First-aid.

Other materials to be provided by the school authority through improvisation by teachers are: (i) A stock book; (ii) If it is a biology laboratory, a good collection of specimens well preserved; (iii) Basic reagents and chemicals labelled and covered with lids; (iv) Charts to be displayed; (v) laboratory manuals; and (vi) Qualified laboratory attendant.

Having completed the inspection exercise, an inspection report must be written. The inspection report is a blue-print showing the standard of education in the particular school inspected at that point in time, therefore, the inspector is obliged to report faithfully what he has seen and make appropriate recommendations.

Implications of supervision and inspection for science instruction

1. The availability of the approved syllabuses for both the JSS and SSS ensures that: (a) there is uniformity in the content of the science taught in our secondary schools; (b) these documents can easily be consulted whenever the need arises; and (c) teachers would also be obliged to consult these syllabuses when drawing up the schemes of work for their various subjects for effective teaching of these subjects.

2. The schemes and record of work book provide working syllabus and when well-prepared will ensure that:
   a. Instruction, especially in science, is taught in an organized and logical sequence from the simple to the difficult topics; from the concrete to the abstract and from the known to the unknown, which is the rule in science teaching to bring about easy understanding of science concepts.
   b. What is being taught in one school in a particular term would be exactly what is taught in another school during that same term thus, making for uniformity in subject matter in that particular subject area.
   c. There is orderliness in arrangement of the topics so that the principal and teachers are aware of how many topics would be covered in a term or in a particular class.
   d. A well-prepared scheme of work also makes the teacher aware of the bulk of work he has to contend with in a term or session thus, he is obliged to work according to schedule in order to be able to cover the syllabus as would be recorded in the "work-done" column of the scheme and record book.
   e. Gradable assignments are given to students because the column has to be filled and signature appended thus, making evaluation of students for that topic possible.
   f. Practical work in science is not neglected as this has to be reflected in the scheme of work of the science subjects taught in the school.

3. The school time-table must be approved by the inspectorate division of the ministry and must be drawn before the school commences or within a few days of school resumption. This must be displayed where both students and teachers can gain access to it in order to ensure that:
   a. the distribution of teachers and the number of teaching periods per week allotted to them is known so that teachers can get prepared for lessons;
   b. the classes and subjects they would be teaching would be made clear, to prevent unnecessary delay in starting their lessons; and
c. the class time-table is drawn from it in order for individual classes to know how many periods per week of each subject would be taught and by which teacher. This would enable students to settle down. It is common knowledge that in most of our secondary schools, teaching does not commence until the second or third week of the school’s resumption date because the time-table is often not drawn as at that time.

4. The school laboratory is a unique instructional aid and there may be two or three laboratories for teaching Integrated Science in the JSS and Physics, Chemistry, Biology in the SSS. If stocking is adequate, equipment and apparatus efficiently maintained, and supervision is thorough through regular inspection, regular laboratory sessions would ensure that:

a. students would acquire a range of manipulative skills which is one of the challenges of the 6-3-3-4 system;
b. students get used to certain procedures in science such as measuring, classification, observation and making relevant inferences; and
c. through maintenance, the already acquired laboratory equipment and facilities would last longer thus, providing students with a continuity in practical work which is also desirable in the new programme.

5. Thorough classroom supervision during an inspection exercise would entail the examination of the different aspects of teaching such as presentation, knowledge of subject matter and effective use of instructional aids by the teacher. It would also enable the teacher to improve on his performance in future if adequate guide is given to such a teacher. Consequently, this would affect the quality of instruction he would later give to learners.

6. The school library, if adequately equipped by the Ministry, and given thorough supervision by the principal through his teachers, would:

a. cultivate in the students the reading culture; and
b. provide an improvement in both spoken and written English as this is an aspect crucial to all subject areas since English is still the instructional medium in our secondary schools, even for science instruction.

7. The recommended science textbooks, if provided in adequate numbers by the ministry of education, would make teaching easier for the teacher especially as most students cannot afford to buy science textbooks for use in the classroom.

8. By keeping good records, the school authority would encourage: (a) quick evaluation of individual students’ academic progress; (b) the principal to report on the behaviour of his students; (c) the school to detect truants and difficult students easily; and (d) keeping of records pertaining to academic progress of individual students which is particularly relevant to the 6-3-3-4 system.

9. The inspection report has the following implications:

a. It is a practical handbook through which the principal, the ministry and the governing body can direct the school from its present position to one of higher academic, social and physical standards (Foster, 1982).

b. It would also enable the school to obtain a feedback on the general tone of the school and the quality of science instruction in the school.
Recommendations and conclusion

Since science is the bedrock of technology and the 6-3-3-4 educational system places greater emphasis on science education, all efforts should be made including thorough supervision and inspection of schools in order to achieve the aims and objectives of the new policy. To this end, the following recommendations are made:

1. The inspectorate division of the ministries of education should increase its number of staff by training more science inspectors in order to cope with the demands of the science curriculum of the 6-3-3-4 programme.

2. The resource allocation to science equipment and basic instructional aids should be increased so that most school laboratories can be equipped with the minimum facilities.

3. The ministries of education should build laboratories in all secondary schools with a view towards effective teaching and laboratory work in science.

4. Adequate inventory should be kept of science equipment and materials supplied to the various schools, in order to know the resources available at a particular time in each school.

5. Regular school inspection should be conducted to ensure good management of laboratory equipment and effective use of other instructional aids.

6. More trained science teachers are needed to cope with the demand of the science curriculum in the new policy.

7. A continuous assessment unit should be established in each secondary school to ensure that the consciousness of the school with regard to keeping records of academic progress of each student is awakened.

In conclusion, this paper has tried to highlight the need for effective supervision and regular inspection of Nigerian secondary schools in order to improve the quality of instruction in general, and science in particular. More than ever before, our schools are yearning for the services of the inspectorate division in areas pertaining to record keeping which has not been given enough attention in the past; provision of adequate number of science equipment to meet the demand of large class size; good management of equipment and other material resources; adequate motivation of the human resources—namely the teachers and non-teaching staff. This can only be done through thorough school supervision and regular inspection to provide the type of instruction and standard demanded by the 6-3-3-4 programme.

Since school supervision and inspection are both phases of administration specifically focussing on the improvement of the school, supervisory duties should be the joint responsibility of officers from the inspectorate division of the ministry of education and the school administrators. Thus, there is a need for a good working relationship and understanding between the two partners for the successful implementation of the science curriculum in order to realize our national goals with regard to technological advancement.

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